ABSTRACT

Title of Dissertation: A DAILY DIARY ANALYSIS OF PRESCHOOL DEPRESSIVE BEHAVIORS: SAME DAY AND PROSPECTIVE ASSOCIATIONS ACROSS 14 DAYS

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Depressive disorders can be observed in early childhood and are associated with significant concurrent and prospective impairment. Although young children demonstrate similar depressive behaviors as older children and adults, certain depressive behaviors, such as sadness and irritability, are more common in early childhood whereas other depressive behaviors, such as loss of pleasure and suicidal ideation, are much less common. However, little is known about day-to-day variations in common depressive behaviors and factors impacting those variations in early childhood. The current study examined the day-to-day variability and co-occurrence of two common depressive behaviors in young children, sadness and irritability, and predictors of their day-to-day change. Participants included 291 parents of preschool-aged children (ages 3-5).

Parents completed a baseline questionnaire assessing demographics, current emotional/behavioral problems, and functional impairment, and then completed an electronic daily diary for 14 days assessing the frequency of daily depressive behaviors, sleep quality, and parent-child relationship functioning. Results indicated that irritability and sadness frequently co-occurred during the same day and were concurrently and prospectively associated with parent-child relationship functioning but not sleep quality. Moreover, we observed between-person stability, but within-person variability, in children's sadness and irritability across 14 days, and that this variability was moderated by several factors. With few exceptions, we observed greater between-person stability in sadness and irritability for older preschoolers, for males, and for children with overall better functioning (e.g., absence of less common depressive symptoms, fewer baseline psychiatric symptoms, lower baseline impairment, better parent-child relationship functioning and sleep quality). Importantly, our findings highlight stability of children's sadness and irritability relative to peers and variability relative to their own mean sadness and irritability, as well as provide evidence regarding factors predicting the day-to-day stability or variability of these common depressive behaviors. Understanding daily variation in child depressive behaviors and factors predicting variation can identify at-risk children and provide targets for prevention and intervention, which is particularly crucial given that preschool depression predicts later depression and other psychiatric disorders.

A DAILY DIARY ANALYSIS OF PRESCHOOL DEPRESSIVE BEHAVIORS: SAME DAY AND PROSPECTIVE ASSOCIATIONS ACROSS 14 DAYS

by

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Dedication

To my family, without whom this dream would not have been realized. Thank you for your never-ending support and love. TTMAB.

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Chapter 1: Introduction

Depression is a major public health concern for children, adolescents, and adults (Kessler et al., 2005; Kessler & Bromet, 2013; Patel, Flisher, Hetrick, & McGorry, 2007) and an increasing public health concern for young children (Luby, Belden, Pautsch, Si, & Spitznagel, 2009), yet little is known about the phenomenology of depression in early childhood. Prior research has established that prevalence rates of preschool depression range from 0-2% with the use of clinical interviews (Bufferd, Dougherty, Carlson, & Klein, 2011; Carter et al., 2010; Egger & Angold, 2006; Ezpeleta, de la Osa, & Doménech, 2014; Lavigne, LeBailly, Hopkins, Gouze, & Binns, 2009; Wichstrøm et al., 2012) and has documented its association with significant impairment in the domains of school, daycare, home, and psychosocial functioning (Bufferd et al., 2011; Danzig et al., 2013; Luby et al., 2009; Luby, 2010; Whalen, Sylvester, & Luby, 2017). Preschool depression is frequently comorbid with other internalizing and externalizing disorders, including anxiety, attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and conduct disorder (Bufferd et al., 2011; Egger & Angold, 2006; Luby et al., 2009; Wichstrøm et al., 2012), patterns similar to those observed in school-age children (Angold & Costello, 1993; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Luby et al., 2009). Moreover, preschool depression demonstrates continuity, predicting both depression (homotypic continuity) and other psychiatric disorders (heterotypic continuity) later in childhood (Bufferd, Dougherty, Carlson, Rose, & Klein, 2012; Finsaas, Bufferd, Dougherty, Carlson, & Klein, 2018; Luby et al., 2009; Luby, Gaffrey, Tillman, April, & Belden, 2014). Despite these gains in understanding the clinical characteristics of depression in young children, preschool psychopathology is under-detected by physicians (Glascoe, 2000; Jensen, 2011), often going undetected until problems become more severe (Glascoe, 2000; Tolan & Dodge, 2005). This

under-detection is likely attributable to rapid changes in early childhood and difficulties recognizing when normative behaviors and mood changes in this developmental period become clinically significant (e.g., Bufferd, Dyson, Hernandez, & Wakschlag, 2016; Carter, Briggs-Gowan, & Davis, 2004; Cole, Luby, & Sullivan, 2008; Stringaris, 2011). Understanding the phenomenology of preschool depression is critical for guiding pediatricians, psychologists, and other health providers in the accurate identification of depression in young children.

Limitations in preschool mental health assessment

Assessment of preschool depression in research and clinical settings typically involves parent-reported questionnaires or clinical interviews based on diagnostic criteria in the *Diagnostic and Statistical Manual of Mental Health Disorders, fifth edition* (DSM-5; American Psychiatric Association, 2013). However, these assessment approaches have notable limitations. First, these measures typically require primary caregivers to report on children's emotions and behaviors over timeframes ranging from the past two weeks to the past six months, increasing the likelihood that parents provide aggregate responses without consideration of day-to-day patterns in children's behavior. As a result, this approach heightens vulnerability to retrospective bias, including recalling more salient experiences, more recent experiences, or averaging levels of behavior, and is also vulnerable to the reporter's current mood state and biases (Bolger, Davis, & Rafaeli, 2003; Gunthert & Wenze, 2012). Second, these measures often fail to probe for useful clinical features of depressive symptoms, such as frequencies, intensities, durations, or contexts in which the symptoms manifest. Third, terminology used in questionnaires and clinical interviews, similar to terminology used in the *DSM*, is vague (e.g., "often," "excessive"), contributing to variability in parent report. Further, parents are often required to report on children's emotions and behaviors relative to those of their peers (e.g., whether tearfulness

occurs more often than in peers). Parental exposure to their child's same-age peers varies and may contribute to more subjective ratings on questionnaires and clinical interviews. Finally, current assessments of preschool behaviors and emotions involve little consideration of normative development. Sadness and irritability are common behaviors during the preschool years, yet few clinical tools assess whether their occurrence is excessive, persistent, or impairing enough to be deemed clinically significant.

Advances in developmentally-sensitive assessment

These assessment limitations and the reliance on *DSM* criteria for diagnosing mental health disorders have resulted in recent efforts targeting the accurate detection of preschool depression. Although prior work has suggested that preschoolers are too young to demonstrate depressive symptoms (Rie, 1966), researchers have started to clarify the clinical picture of depression in early childhood (Bufferd, Dougherty, & Olino, 2017; Luby, Heffelfinger et al., 2003). Indeed, work by Luby and colleagues has demonstrated that depressive psychopathology in preschoolers can be identified and differentiated from other forms of psychopathology (Luby et al., 2009). Moreover, preschool-aged children demonstrate "typical" markers of depression, including anhedonia, changes in activity, appetite, and sleep, low energy, low self-esteem, talk of death or suicide, and excessive guilt, as well as somatic complaints and withdrawn behavior (Luby, Heffelfinger et al., 2003). For example, a preschooler with depression may demonstrate excessive guilt through frequent comments such as, "It's all my fault." Anhedonia in preschoolers may manifest as decreased enjoyment derived from a toy that the child typically enjoys, such as stuffed animals or magnetic tiles. Depressed preschoolers may also withdraw from fun activities, such as school activities, similar to the withdrawal observed in depressed

adults. Establishing the presence of depressive symptoms in young children provided a critical first step in the accurate identification of clinically-significant behaviors and emotions.

This foundational work and the reliance on *DSM* criteria for diagnosis spurred close examination of *DSM* modifications to accurately identify preschoolers with depression. Luby and colleagues (2002) tested the utility of modified diagnostic criteria in a sample of 136 preschool-aged children. Modifications included: 1) specification that the presence of depressed mood or loss of interest or pleasure occurred in activities or play, 2) fewer total symptoms required if children demonstrated both depressed mood and loss of interest or pleasure, 3) depressed mood or irritability or loss of interest for a portion of the day for several days, rather than the typical two-week timeframe, 4) specification that feelings of worthlessness or guilt could be evident in play themes, 5) diminished ability to concentrate for several days, and 6) suicidal or self-destructive themes persistently evident in play. They found that 76% of the preschoolers who met the modified diagnostic criteria for major depressive disorder did not meet the diagnostic threshold under the original *DSM* criteria. Nevertheless, children who met the modified diagnostic criteria for depression demonstrated significant impairment. Taken together, these findings suggest that children meeting modified diagnostic criteria reflect a clinical, rather than a high-risk, population, and provide further evidence of the under-detection of preschool depression.

Although Luby's (2002) modified criteria for preschool depression represents an advancement in developmentally-sensitive assessment, it remains unclear to what extent these behaviors must be present in young children to be considered clinically-significant. To gain a more thorough understanding of normative versus atypical depressive behavior in preschoolers, a recent study characterized the frequency and severity of these behaviors using a 14-day daily

diary assessment in the current sample (Bufferd et al., 2017). Item response theory results demonstrated that sadness, irritability, and tearfulness/sensitivity are common behaviors in young children and thus must occur at higher frequencies to be deemed severe or rare. In contrast, anhedonia and low self-worth were less common behaviors and thus were deemed severe or rare at lower frequency thresholds. This dimensional approach afforded examination of the full spectrum of normative behaviors rather than limiting analysis to only clinically-significant behaviors. The dimensional approach is also useful for identifying prodromal symptoms – early symptoms or signs which are indicative of the later development of a clinical disorder (Wakschlag et al., 2015). Nevertheless, investigation of depressive behaviors in young children remains challenging given that mood variability, sadness, and irritability are common and developmentally normative to a certain extent in young children (Bufferd et al., 2016; Deater-Deckard & Wang, 2012; Stringaris, 2011; Wakschlag, Tolan, & Leventhal, 2010). As symptoms of depression such as anhedonia, guilt, changes in sleep and appetite, and decreased activity are the most sensitive and specific markers of preschool depression (Luby, 2010), the mere presence of sadness and irritability is not clinically informative.

Characterizing depression in young children necessitates a fine-grained, day-to-day analysis of sadness and irritability given their non-specific nature. Prior work has documented that preschoolers can be clinically depressed (e.g., Bufferd et al., 2011; Carter et al., 2010; Egger & Angold, 2006; Luby et al., 2002; Wichstrøm et al., 2012), that the depressive symptoms applicable for diagnosis in adults might require developmental modifications (Luby et al., 2002), and that sadness and irritability are common in young children (Bufferd et al., 2016, 2017; Deater-Deckard & Wang, 2012; Stringaris, 2011). Nevertheless, little is known about day-to-day variability of these depressive behaviors and whether variability is associated with risk status.

Moreover, prior research in young children has largely examined between-person differences in depressive behaviors rather than day-to-day variability of depressive behaviors within a child. Whereas between-person analyses provide information regarding stable individual differences between children, within-person analyses can provide important information regarding individual-specific antecedents and consequences. Although fluctuations at the within-person level contribute to between-person differences, patterns at one level may diverge from those at the other level. Moreover, parents typically present to pediatricians with concerns about their child's moods or behaviors (Gruttadaro & Markey, 2011), such as emotional lability. An understanding of normative within-person fluctuations in depressive affect and behavior is critical to equipping providers with knowledge about typical versus atypical behavior, especially considering that these providers are often parents' first point of healthcare contact. By gaining an understanding of affective phenomenology in young children, pediatricians and other primary care providers may be able to either normalize parental concerns or refer families to further mental health services. In sum, no prior work, to our knowledge, has examined the day-to-day phenomenology of common depressive behaviors in young children or factors influencing their variability. This examination is critical to gaining a developmental perspective on normative patterns of behavior and to identifying young children at risk for the development of depression. Failing to take this developmental approach could lead to downward extension of adult depression models that may not be supported for children in this age group (Luby et al., 2002).

The daily diary approach

To characterize the day-to-day phenomenology of preschool depressive behaviors, we used a daily diary approach in which primary caregivers provided a daily assessment of their child's depressive behaviors each evening. The use of a daily diary design has multiple

advantages. First, this approach is of particular importance as it yields fine-grained, daily information regarding children's depressive behaviors. Second, many current assessments of child psychopathology require parents to report children's symptoms over periods ranging from the past two weeks to the past six months. The daily diary approach greatly minimizes retrospective bias in the reporting of children's behaviors, increasing reliability and validity by decreasing systematic and random error (Bolger, Davis, & Rafaeli, 2003; Tennen & Affleck, 2002). In addition, use of daily diaries increases ecological validity, as parents fill them out daily at home rather than researchers assessing children's emotions and behaviors in the laboratory. Third, by assessing children's depressive behaviors daily, we can obtain dimensional, developmentally-sensitive information regarding the frequencies of these behaviors rather than assessing only behaviors that occur at clinical levels. This approach also overcomes a criticism of the current diagnostic system – namely, that examination of disorders precludes consideration of symptom presence and distribution (Drabick, 2009). Fourth, the nested design of a daily diary study permits disaggregation of between-person and within-person effects, affording an examination of children compared to their peers as well as compared to themselves on other days. For example, between-person effects address questions such as, "How much does this child's average sadness differ from the average sadness of all children in the sample (i.e., how does this child compare to his/her peers)?" whereas within-person effects address questions such as, "How does this child's sadness today differ from his/her average sadness across all 14 diary days?." Lastly, the prospective design of the daily diary and use of an idiographic approach allows temporal sequencing analysis of behaviors from day-to-day within each child (Bolger et al., 2003; Gollob & Reichardt, 1987; Little, Card, Preacher, & McConnell, 2009; Tennen & Affleck, 2002), highlighting dynamic processes and contextual factors that affect day-to-day

variability in children's depressive behaviors. Temporal sequencing analysis also reduces vulnerability to reverse causation and aids in the establishment of causal ordering. In sum, daily diaries offer a critical tool for leveraging information of significant clinical utility and hold promise for advancing our understanding of preschool mental health.

Daily diaries of mood and affect

Prior work has shed light on daily affective experiences and variability in older youth and adults through the use of daily diaries. Diary studies have documented that affect is both a trait and a state (Watson & Clark, 1984; Watson, 1988), and that individuals fluctuate substantially around their mean affect level (e.g., Brose, Voelkle, Lövdén, Lindenberger, & Schmiedek, 2015). Indeed, estimates of within-person variation in negative affect range from 39-55% in adults assessed over 5-56 days using both daily diary and ecological momentary assessment (EMA) methods (Blaxton, Bergeman, Whitehead, Braun, & Payne, 2017; Fuller-Tyszkiewicz, Karvounis, Pemberton, Hartley-Clark, & Richardson, 2017; Galambos, Dalson, & Maggs, 2009; McCrae et al., 2008; Merz & Roesch, 2011; Sin et al., 2017; Thompson et al., 2012). In children, estimates of within-person variation in middle childhood range from 60-62% for negative affect assessed over 7-31 days in 6- to 7-year-olds (Aunola, Tolvanen, Viljaranta, & Nurmi, 2013; Könen, Dirk, & Schmiedek, 2015) and 61% for well-being assessed over 5 days in 8- to 10-year olds (Van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017). These data suggest that examination of negative affect at both the between-person and within-person levels is crucial to provide a more complete picture of affect variability, particularly as related to depression (aan het Rot, Hogenelst, & Schoevers, 2012).

Some prior work has also assessed the temporal dynamics and variability of emotion in adolescents and adults and has linked variability to negative health outcomes. However,

synthesis of prior work examining affective or emotional "variability" is challenging due to mixed definitions of "variability," which led to a recent meta-analysis that described emotional variability as the amplitude of emotional states over time (Houben, Van Den Noortgate, & Kuppens, 2015). Greater emotional variability is thus characterized by more extreme emotions or deviations from one's own average emotional level (the within-person variance) (Eid & Diener, 1999; Houben et al., 2015) and may be associated with poor outcomes. Although other metrics of affect hold implications for well-being, including the magnitude of emotion changes (referred to as "emotion instability") and the ability of previously-measured mood intensity to predict mood intensity at next measurement (referred to as "emotional inertia") (Houben et al., 2015; Kuppens, Allen, & Sheeber, 2010), the focus of the present study is affective variability. Models proposed by Kuppens and colleagues (2007) demonstrated that significant variability in affective valence is associated with neuroticism, and Eaton and Funder (2001) found that greater intraindividual variability in daily emotion was associated with greater withdrawal from life. In addition, an increasing body of work has linked affective variability to depression (Peeters et al., 2006) and prospective negative affective symptoms one year later in adults (Wichers et al., 2010). Moreover, prospective day-to-day associations of negative affect have been demonstrated in samples of adults assessed over 14-30 diary days, in which greater negative affect the prior day relative to the individual's own mean predicted greater negative affect the following day (Bouwmans, Bos, Hoenders, Oldehinkel, & de Jonge, 2017; Galambos et al., 2009). Taken together, these findings underscore the importance of examining affective variability given concurrent and prospective associations with well-being.

The extant literature has been mixed with regard to the adaptive or maladaptive nature of affective variability in adults and older adolescents. On the one hand, affective variability may be

a sensitive indicator of vulnerability and reflect difficulties with coping. Although better well-being is associated with less variable and more stable emotions (Gruber, Kogan, Quoidbach, & Mauss, 2013; Houben et al., 2015), frequent, minor emotional disturbances can have negative cumulative effects and increase risk for affective disorders (Schneiders et al., 2007; Wichers, 2014) due to the need for coping on a regular basis. Indeed, daily intraindividual variability in negative affect is associated with more internalizing and externalizing symptoms in adolescents (Maciejewski et al., 2014; Silk, Steinberg, & Morris, 2003) and with depression, neuroticism, and lower well-being in adults (Eid & Diener, 1999; Houben et al., 2015; Koval, Pe, Meers & Kuppens, 2013; Kuppens, Van Mechelen, Nezlek, Dossche, & Timmermans, 2007; Oliver & Simons, 2004; Peeters, Berkhof, Delespaul, Rottenberg, & Nicolson, 2006; Röcke et al., 2009; Thompson, Berenbaum, & Bredemeier, 2011). Intraindividual variability in adult and adolescent mood has thus been considered a reflection of "frailty" or "lack of robustness" and suggestive of persistent difficulties with coping when variability does not decrease over time (Gable & Nezlek, 1998; Röcke & Brose, 2013). On the other hand, greater affective variability may reflect an adaptive response to the environment (Gable & Nezlek, 1998; Röcke & Brose, 2013). Affective change may be indicative of a more flexible emotional response to daily events and an indicator of better psychological health (Hollenstein, 2015; Hollenstein, Lichtwarck-Aschoff, & Potworowski, 2013; Houben et al., 2015; Kashdan & Rottenberg, 2010). Emotion and affect are useful indicators of one's current state and thus affective variability can provide information regarding one's inner experience and reflect adaptation to the environment (Röcke & Brose, 2013). Despite this data, no studies to our knowledge have examined affective variability in young children, and thus it is unknown whether emotion dynamics in young children could be adaptive or indicative of risk for depression. It is likely that greater affective variability is present

and common in younger children relative to older youth and adults given their developing emotion regulation capacities, although large variability may be indicative of increased risk.

Studies of adolescents and adults demonstrate age-related changes in affective variability. Young adults (ages 20-30) show greater net variability in negative affect compared to older adults (ages 70-80) (Röcke, Li, & Smith, 2009). It is possible that this lower variability for older adults is attributable to more refined emotion regulation skills or to context – older adults may develop more routines and thus have less emotionally demanding days than younger adults (Röcke & Brose, 2013). In a similar fashion, Maciejewski and colleagues (2015) observed that variability in daily sadness, happiness, and anger increased around early adolescence and declined across adolescence, a finding they noted may be explained by increases in mood variability due to pubertal changes in early adolescence. However, no studies have examined affective variability in early childhood. It is possible that young children lack the emotion regulation strategies found in older youth and adults, which may place them at risk for increased mood variability. In addition, emotions and emotion variability have been linked to environmental factors in older children, including family chaos (e.g., Coldwell, Pike, & Dunn, 2006; Dumaes et al., 2005), parent-child dyadic emotion variability (Van der Giessen et al., 2015) and stressors occurring for parents outside the home (e.g., Repetti, Wang, & Saxbe, 2009), and thus preschoolers' affective variability may vary as a function of environmental demands, such as the functioning of the parent-child relationship on a given day.

Although little work has examined affective variability in early childhood, prior work suggests that affective variability in older youth may vary by sex. During adolescence, females demonstrate more depressive symptoms than males (Hankin, Mermelstein, & Roesch, 2007). At the daily level, diary studies have shown that adolescent females report more daily negative

mood (Flook, 2011) and greater variability in daily sadness (Maciejewski et al., 2015) relative to males. This effect may be mediated by exposure to interpersonal stressors given that females are more sensitive to interpersonal stressors, such as parent-child conflict, than males (Hankin et al., 2007; Telzer & Fuligni, 2013). However, sex differences in depression strengthen with age and are usually not observed in toddlerhood or early childhood (Bufferd et al., 2011; Luby, Heffelfinger et al., 2003; for a review, see Chaplin & Aldao, 2013). Considering that socialization of emotion expression may begin as early as the preschool years (Chaplin, Casey, Sinha, & Mayes, 2010), examining the daily dynamics of affect in early childhood may clarify whether affective variability may differentially contribute to risk based on child sex.

Daily sleep and affect

Expanding upon the daily diary of affect and mood, studies have examined how affect relates to another daily behavior – sleep behavior. Various aspects of sleep behavior have been investigated, including sleep quantity, sleep quality, and sleep onset latency, and results consistently support the role of sleep in shaping affect and emotion regulation in youth (e.g., Baum et al., 2014; Dahl & Lewin, 2002; Lavigne et al., 1999; for a review, see Gregory & Sadeh, 2012) and adults (e.g., Kahn-Greene, Killgore, Kamimori, Balkin, & Killgore, 2007; McCrae et al., 2008). Much of the sleep literature has focused on adults or clinical populations (e.g., Baglioni, Spiegelhalder, Lombardo, & Riemann, 2010; Bower et al., 2010; Cousins et al., 2011), with less attention to childhood sleep-affect associations. Given the high sleep requirements for preschoolers (10-13 hours) relative to adults (7-9 hours) (Hirshkowitz et al., 2015), young children may be more sensitive to disruptions in sleep than adults and thus their mood may be more closely linked to sleep behavior.

A growing body of literature has examined associations between sleep quality and affect with the use of daily diary studies. Diary studies of sleep quality have documented prospective associations between poorer sleep quality the previous night and more negative affect the following day in adults when assessed over 7-56 diary days (Blaxton et al., 2017; Bouwmans, et al., 2017; de Wild-Hartmann et al., 2013; Kalmbach, Arnedt, Swanson, Rapier, & Ciesla, 2017; McCrae et al., 2008, 2016; Simor, Krietsch, Köteles, & McCrae, 2015; Sin et al., 2017; Sonnentag, Binnewies, & Mojza, 2008). Moreover, this association has been observed in both depressed and non-depressed adult samples (Bouwmans et al., 2017). Similarly, sleep diary research in children during middle childhood has found that decreased sleep duration and poor sleep quality predict greater negative affect (Könen, Dirk, Leonhardt, & Schmiedek, 2016) and greater difficulty with emotion regulation the following day (Gruber, Cassoff, Frenette, Wiebe, & Carrier, 2012; Vriend et al., 2013). Taken together, these findings suggest that poorer sleep quality has similar negative implications for subsequent affect the following day in both children and adults.

Evidence also supports the possibility of a bidirectional link between children's daily affect and daily sleep quality, though findings have been mixed. Studies of adults have demonstrated that greater negative affect and anhedonia are associated with poorer same-night sleep quality (Kalmbach et al., 2017; Sin et al., 2017) and more sleep fragmentation (Simor et al., 2015), and that poorer sleep quality and more sleep fragmentation the prior night predicted greater negative affect and anhedonia the following day (Kalmbach et al., 2017; Simor et al., 2015; Sin et al., 2017). These associations may also persist past a two-week diary period in children. For example, age eight sleep problems predicted greater internalizing symptoms at age ten (El-Sheikh, Kelly, Buckhalt, & Hinnant, 2010) and greater depressive symptoms at age eight

also predicted poorer sleep quality at age ten (Kelly & El-Sheikh, 2014). However, other daily diaries have documented unidirectional effects only (Bouwmans et al., 2017; Galambos et al., 2009; Könen et al., 2016). Several studies observed that greater within-person sleep quality predicted lower negative affect the following day, but that within-person negative affect did not predict same night sleep quality in adults (Bouwmans et al., 2017; Galambos et al., 2009) or children (Könen et al., 2016), a finding which held regardless of the participant's depression status (Bouwmans et al., 2017). In contrast, Kalmbach and colleagues (2014) demonstrated that greater within-person negative affect predicted poorer same night sleep quality in adults, whereas within-person sleep quality did not predict negative affect the following day. Recent work has also suggested that sleep variability (e.g., sleep duration) is associated with greater internalizing and externalizing symptoms in adolescents (Fuligni, Arruda, Krull, & Gonzales, 2018). Given that change in sleep habits is a symptom of depression and that sleep quality can predict internalizing symptoms in middle childhood (El-Sheikh et al., 2010), examining the daily interactions between sleep quality and affect in early childhood can provide a crucial understanding of depression risk in young children and may present an opportunity for earlier intervention and reduction of the negative sequelae associated with poor sleep quality.

Daily parent-child relationship functioning and affect

The parent-child relationship reflects another critical component of the daily experience for preschool-aged children. Greater time spent between parents and children is associated with both greater parental support of the child and greater parent-child conflict (Almeida, Wethington, & McDonald, 2001), suggesting that more time spent together can result in both positive and negative parent-child interactions. The parent-child relationship has thus been implicated as both a stressor and a buffer for child depression (Steinberg, 2001). Indeed, parental warmth and

support are associated with fewer depressive symptoms in children, whereas parental hostility is associated with greater child depressive symptoms (McLeod, Wood, & Weisz, 2007). Given that repeated exposure to daily hassles within the home environment is associated with more physical and mental health problems in childhood (Repetti, Robles, & Reynolds, 2011), examining day-to-day dynamics of the parent-child relationship and child affect can clarify "precursor outcomes" of later poor functioning.

Several studies have applied the daily diary approach to studying parent-child relationships and their implications for children's mental health in older youth and adolescents. Studies of adolescents have documented that days characterized by greater parent-child conflict and negative interactions were also characterized by greater adolescent distress (Chung, Flook, & Fuligni, 2009) and negative affect (Herres, Ewing, & Kobak, 2016). In contrast, on days characterized by more positive parent-child interactions, adolescent females demonstrated decreases in depressive symptoms and distress (Telzer & Fuligni, 2013). Furthermore, risk status may also contribute to the link between affect and parent-child interactions. Using experience sampling over five days, Schneiders and colleagues (2007) found that adolescents with higher baseline internalizing and externalizing symptoms demonstrated more depressive symptoms in the presence of their family relative to adolescents with lower baseline internalizing and externalizing symptoms, which may be attributable to a greater number of parent-child arguments in the higher-risk group. Evidence also suggests associations between parent-child interactions and negative affect and well-being in children. For instance, days characterized by greater maternal psychological control predicted greater child negative affect (Aunola et al., 2013) and poorer child well-being (Van der Kaap-Deeder, Vansteenkiste, Soenens, & Mabbe, 2017) the following day in middle childhood. These findings indicate that context and reactivity

to negative parent-child events, rather than just exposure to them, may play a role in the development and maintenance of negative affect and depression. Importantly, these associations appear to persist over longer diary periods. A 42-day diary study by Almeida and colleagues (1999) demonstrated that greater parent-child relationship tension the previous day was associated with a threefold increase in the likelihood of parent-child relationship tension the following day, providing evidence of "spillover" from one day to the next. Studying the daily dynamics of affect and parent-child relationship functioning holds promise for identifying early risk for psychopathology, particularly given prior evidence of greater depression risk for individuals with more negative reactivity to negative interpersonal events (Charbonneau, Mezulis, & Hyde, 2009; O'Neill, Cohen, & Toplin, 2004).

Gaps in the literature

Despite these advances in the understanding of day-to-day emotion dynamics, little is known about their manifestations in young children. First, to our knowledge, no prior work has examined the daily dynamics of affect or depressive behaviors in a preschool-aged sample. Examining the stability and variability of common depressive behaviors during this developmental period can provide a critical tool for increasing the developmental sensitivity of psychopathology assessment measures in preschoolers. Symptoms of depression in preschoolers can reflect both normative development changes and responses to the environment (Carter et al., 2004) and thus examination of behaviors during this developmental period may help differentiate typical from atypical developmental pathways. Identification of patterns in the variability of common depressive behaviors may facilitate identification of prodromal symptoms (Tolan & Dodge, 2005) and improve detection of preschool risk factors for the development of depression. The preschool period may also reflect an ideal time to examine depressive behaviors given that

greater neuroplasticity during this period can enhance the therapeutic effects of early intervention (Cicchetti & Curtis, 2006).

Second, no studies have examined factors affecting the variability of depressive behaviors in young children. By examining moderators of daily depressive behaviors, triggers of negative emotion dynamics can be identified and mitigated. Moreover, knowledge of these risk factors can inform prevention efforts. Lastly, many prior studies have examined emotion dynamics in clinical populations of adults and adolescents. We sought to identify these dynamics in a community sample to clarify normative developmental patterns and inform later identification of children whose affective variability or lack thereof may place them at risk for depressive disorders. Given the lack of research on daily affect during this developmental period, an understanding of emotion dynamics in non-clinical populations is first necessary to provide a developmentally sensitive assessment of common depressive behaviors. This research will permit later examination of how daily affective experiences in young children with psychiatric disorders differ from those observed in a community sample. In addition, this investigation is critical to developing medical and psychiatric guidelines for the screening of young children at-risk for depression and will provide targets for intervention and prevention, which is particularly important given evidence for the homotypic and heterotypic continuity of preschool depression (e.g., Bufferd et al., 2012; Finsaas et al., 2018; Luby et al., 2009, 2014).

Current study

The current study aimed to address these gaps in the literature by examining the daily dynamics of depressive behaviors in a community sample of 291 preschool-aged children. Specifically, we examined same day (concurrent) between-person and within-person associations between children's daily sadness and irritability and other daily factors such as sleep quality and

parent-child relationship functioning. Further, we examined the day-to-day variability of and prospective associations between children's sadness and irritability and child sleep quality and parent-child relationship functioning across days. Finally, we examined factors impacting the day-to-day variability of children's sadness and irritability across a 14-day diary period, including child age and sex, less common depressive behaviors, baseline psychiatric symptoms and impairment, sleep quality, and parent-child relationship functioning.

The current study included a two-week assessment of children's depressive behaviors, including both common and rarer behaviors. Furthermore, we collected information regarding not only the presence but the frequency of daily depressive behaviors to gain a dimensional and developmentally-sensitive understanding of these behaviors in young children. Children's depressive behaviors were assessed using a daily diary containing questions derived from a well-validated parent questionnaire and a well-validated parent-reported clinical interview. Generalized multilevel modeling was applied to examine the frequencies of children's common depressive behaviors across diary days. In addition, other components of children's daily experience, sleep quality and parent-child relationship functioning, were assessed over the 14-day diary, permitting examination of the temporal dynamics of their associations with sadness and irritability. Lastly, moderators of daily depressive behaviors provided information regarding individual difference variables that may be associated with depression risk. In sum, the study examined three specific aims:

Aim 1: Examine same day (concurrent) between-person and within-person associations between children's sadness and irritability and other daily factors such as sleep quality and parent-child relationship functioning.

Hypothesis: Depressive disorders in young children may be characterized by either sadness or irritability, both of which are common in early childhood (Bufferd et al., 2016; Deater-Deckard & Wang, 2012; Stringaris, 2011; Wakschlag et al., 2010). The combination of depressed mood and irritability is common of depressive disorders in middle childhood and adolescence (Stringaris, Maughan, Copeland, Costello, & Angold, 2013), suggesting that these two moods co-occur. Moreover, both sadness and irritability are linked with sleep behavior (e.g., Gregory & Sadeh, 2012; Könen et al., 2016) and concurrent interpersonal functioning in children and adolescents (Herres et al., 2016; Telzer & Fuligni, 2013). Thus, we hypothesized that sadness and irritability would frequently co-occur in a given day and would be associated with poorer sleep quality and poorer parent-child relationship functioning on the same day.

Aim 2: Examine day-to-day variability of and prospective associations between children's sadness and irritability and other daily factors, including sleep quality and parent-child relationship functioning, across days.

Hypothesis: Given previous literature demonstrating within-person variation in negative affect around one's own mean from one day to the next in adults (e.g., Brose et al., 2015) and children (Könen et al., 2015), we hypothesized that sadness and irritability would demonstrate within-person variability from day-to-day; however, we hypothesized that mean levels of state affect would be stable across participants, such that sadness and irritability would not demonstrate significant between-person variability from day-to-day. In addition, prior work has documented prospective associations between sleep quality and negative affect in middle childhood (Könen et al., 2016) and has demonstrated "spillover" of parent-child tension from one day to the next (Almeida et al., 1999), and thus we hypothesized that poorer sleep quality the

previous night and poorer parent-child relationship functioning the prior day would predict increases in depressive behaviors the next day.

Aim 3: Examine factors impacting the day-to-day variability of children's sadness and irritability across 14 days, including child age, child sex, less common depressive behaviors, baseline psychiatric symptoms and impairment, sleep quality, and parent-child relationship functioning.

Hypothesis: Evidence has shown that affect is linked to many between-person and within-person factors. Indeed, affective variability is associated with age and sex – variability decreases across adolescence (Maciejewski et al., 2015) and from early to late adulthood (Röcke et al., 2009) and adolescent females demonstrate greater variability in daily sadness relative to males (Maciejewski et al., 2015). However, no sex differences are observed in depression in early childhood (Bufferd et al., 2011; Chaplin & Aldao, 2013; Luby, Heffelfinger et al., 2003). Thus, we hypothesized that greater daily variability in sadness and irritability would be observed for younger preschoolers relative to older preschoolers but would not differ based on child sex.

Given normative changes in development and that sadness and irritability are common in young children, depressive behaviors in young children may appear phenomenologically different than in older children and adults. Thus, a downward extension of adult and adolescent models of affective variability ignores developmental considerations and therefore is inappropriate to apply to young children. While we hypothesized between-person stability but within-person variability in sadness and irritability across days, we had no specific hypotheses regarding how factors related to child functioning (less common depressive behaviors, baseline psychiatric symptoms and impairment, sleep quality, and parent-child relationship functioning) would moderate this variability.

Chapter 2: Method

Participants

The sample consisted of 299 parents of 3-5 year-old children without medical or developmental disabilities. Participants were recruited using flyers sent to local pediatricians, preschools/daycares, and community institutions within a 20-mile radius of two study sites – University of Maryland in College Park, MD and California State University in San Marcos, CA. Eligible parents had a child who was three to five years of age, were English-speaking, had at least 50% legal custody, and had nightly internet access. One child per family participated, and most parents completing the diary were mothers (93.5%). Participants who completed at least one diary (n = 291; 97.3%) were included in the study. This study was approved by the Institutional Review Boards at both universities. Informed consent was obtained from parents both verbally after the completion of the phone screen and online at the time of the baseline questionnaire. See Table 1 for demographic characteristics of the sample.

Procedure

Interested participants first completed a phone screen to assess eligibility criteria. Participants meeting eligibility criteria were emailed a link to an online baseline questionnaire, which was completed through Qualtrics. Participants started their daily diaries on the Monday following completion of the baseline questionnaire. During the phone screen, parents were also asked whether their child recently began a new daycare, camp, or school program. Parents of children who recently (past two weeks) began a new daycare, camp, or school program started their diaries a minimum of two weeks after the start of the program to minimize over-reporting of normative behavioral and emotional symptoms associated with the transition.

All eligible parents were trained by research staff on the completion of the electronic daily diary. Participants were instructed to complete the daily diary after the child's bedtime each evening. Diaries were emailed through Qualtrics to participants at 6:00 PM each evening, and participants were instructed to complete the diary after the child's bedtime for 14 consecutive nights. Participants were permitted to complete the diary up until 12:00 PM the following day (based on the child's behaviors from the previous day) or the diary would be considered missed. Study staff checked for completed diaries each morning and contacted participants to remind them to complete the diary by 12:00 PM. Participants received compensation for completion of the baseline questionnaire and for each daily diary submitted, as well received an additional incentive for completion of all 14 daily diaries.

The total number of diaries completed by each family is included in Table 1. In total, 291 parents (97.3%) completed at least one daily diary, 277 parents (92.6%) completed at least 10 daily diaries, and 213 (71.2%) completed all 14 daily diaries (M = 13.19, SD = 2.26, range = 0-14). The daily diary response rate was similar to or higher than other daily diary studies in which parents reported on their children's behaviors and emotions (Allen, Blatter-Meunier, Ursprung, & Schneider, 2010; Beidel, Turner, & Morris, 1999; Colasante, Zuffianò, & Malti, 2016)

Measures

Baseline psychiatric symptoms. To assess behavioral and emotional difficulties at baseline, parents completed the Early Childhood Inventory – 4 (ECI-4; Sprafkin & Gadow, 1996), a 108-item measure which assessed symptoms of depression, attention-deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and multiple anxiety disorders, including generalized anxiety disorder, social anxiety, separation anxiety disorder, obsessive-compulsive disorder, specific phobia, and selective mutism. On the ECI-4,

parents rated the frequency their children's symptoms on a 4-point Likert scale, ranging from 0 (never) to 3 (very often). Behaviors endorsed by parents were summed in their respective disorder categories to create a composite score reflecting the severity of child psychiatric symptoms: depressive symptoms (11 items; *M* = 15.79, *SD* = 1.73, range = 10-21); anxiety symptom (17 items; *M* = 20.81, *SD* = 3.86, range = 15-41); ADHD symptoms (20 items; *M* = 35.16, *SD* = 7.83, range = 20-62); and ODD symptoms (8 items; *M* = 14.19, *SD* = 3.84, range = 8-27).

Baseline impairment. Child baseline impairment was assessed using the Impairment Rating Scale (IRS; Fabiano et al., 2006). The IRS is an 8-item parent-report measure assessing child functioning across a variety of domains, including with peers, siblings, parents, academics, self-esteem, family, and global functioning. Of note, the IRS was not specific to depressive symptoms but rather provided a global assessment of impairment due to all psychiatric symptoms. Parents were asked to rate how their child's problems affected functioning in each of these areas using a 7-point scale ranging from 0 (No problem; Definitely does not need treatment or special services) to 6 (Extreme problem; Definitely needs treatment or special services). One item assessing functioning with siblings was not applicable for families with only one child; thus, scores in each IRS domain were average to create a composite impairment score (*M* = 1.36, *SD* = .62, range = 1.00-4.38).

Daily Diary.

Daily depressive behaviors. Items assessing depressive behaviors were derived from two reliable and validated measures, the ECI-4 (Gadow & Sprafkin, 1996, 1997) and the Preschool Age Psychiatric Assessment (PAPA; Egger, Ascher, & Angold, 1999). Parents were asked to report the daily frequency of each of twelve depressive behaviors: sadness, irritability, tantrums,

tearfulness, low interest, thoughts of death, low self-esteem, fatigue, and changes in appetite or weight, sleep habits, activity level, or concentration. Sadness, irritability, tantrums, and tearfulness were the most frequently observed depressive behaviors (see Table 2). The daily frequencies of sadness and tearfulness were averaged to create a daily sadness score and the daily frequencies of irritability and tantrums were averaged to create a daily irritability score. Given that sleep quality was assessed daily (see "Daily sleep quality" below), we did not examine parent-reported changes in children's sleep habits over the course of 14 days. We observed relatively low frequencies of the remaining seven depressive behaviors, and thus we created dichotomous variables reflecting whether the behavior was present or absent at least once over the 14-day period (0 = absent, 1 = present). Over the course of 14 days, children were reported to show: low interest (n =102; 35.1%) thoughts of death (n = 73; 25.1%), low self-esteem (n = 118; 40.5%), fatigue (n = 81; 27.8%), changes in appetite/weight (n = 99; 34.0%), changes in activity levels (n = 120; 41.2%), and changes in concentration (n = 81; 27.8%).

Daily sleep quality. Child sleep quality was assessed daily with a single item asking parents to report how well their child slept the previous night on a 5-point scale, ranging from 1 (not at all restful) to 5 (extremely restful) (M = 4.01, SD = .79, range = 1-5).

Daily parent-child relationship functioning. Parent-child relationship functioning was assessed daily with a single item asking parents to report how well the parent and child got along that day. Parents answered on a 1-5 scale, ranging from 1 (we did not get along well today) to 5 (we got along very well today) (M = 4.36, SD = .78, range = 1-5). Of note, the daily diary included questions about other non-depressive behaviors, and thus parents' responses on this item may not have been specific to depressive behaviors but instead reflected a general evaluation of functioning each day.

Design Considerations

Given the advantages of daily assessment noted above, we chose to use a daily diary approach to assessing child depressive behaviors. There are several important design considerations for the daily diary approach used in the current study. First, we chose to have parents complete the diary once daily for 14 consecutive days. While multiple assessments of daily affect with the use of ecological momentary assessment (EMA) can increase power and time-specificity (Könen et al., 2016; Merz & Roesch, 2011; Schneiders et al., 2007; for reviews, see Ebner-Priemer & Trull, 2009; Wenze & Miller, 2010), a "less-is-more" approach is useful for multiple reasons. We opted to collect information about children's depressive behaviors once daily to minimize participant burden and thus increase likelihood of compliance. In addition, once-daily assessment can be achieved easily through the use of a survey emailed to participants at the end of the day, while EMA requires additional finances and technology to prompt participant responding at regular or variable intervals (Gunthert & Wenze, 2012). Despite this once-daily assessment, the use of a two-week diary period and the large sample size ensured sufficient power to examine day-to-day variability at both the between-person and within-person levels. Moreover, diagnostic criteria require depressive symptoms over a two-week period, and thus using a 14-day diary captures depressive behaviors applicable to this diagnostic timeframe.

Second, we obtained reports of children's daily depressive behaviors from the primary caregiver, typically mothers. Mounting evidence emphasizes the importance of leveraging multi-informant reports of preschool mental health symptoms in different contexts (Achenbach, 2006; De Los Reyes & Kazdin, 2005; Hunsley & Mash, 2007; Klein, Dougherty, & Olino, 2005; Kraemer et al., 2003), particularly given that children typically spend increased time outside the home during the preschool years. Nevertheless, parents or primary caregivers are often sole

reporters of children's problematic behaviors to physicians and health care providers at this early developmental stage. Moreover, the current study reflects an initial step toward adopting a developmentally-sensitive approach to the assessment of preschool depression. Thus, we opted to collect information from one parent to minimize participant burden; however, we encouraged parents to collect frequency data of child depressive behaviors from other caregivers and teachers with whom they interacted during the day (e.g., teachers, daycare providers). We will address this single-informant limitation, in part, by controlling for the total amount of time children spend outside the home (i.e., away from the primary caregiver) each day in analyses. Including the total time children spend outside the home as a covariate is also indicated given research documenting that parent-child interactions are characterized by more support and/or conflict on days that parents and children spend greater amounts of time together (Almeida, Wethington, & McDonald, 2001).

Third, we chose to use an electronic daily diary rather than a paper-and pencil diary for multiple reasons. Electronic diaries increase participant compliance (Stone, Shiffman, Schwartz, Broderick, & Hufford, 2003; Palermo, Valenzuela, & Stork, 2004) as well as researcher certainty of parent compliance by providing a time stamp for the completion of the diary (Bolger et al., 2003). Moreover, electronic diaries are preferred by many participants over the use of a paper-and-pencil diary (Ring et al., 2008). Participant reminders can also be easily provided through electronic platforms, which can increase participant compliance (Gunthert & Wenze, 2012). Lastly, because parents entered data themselves into the questionnaire daily, this reduced the likelihood of data entry errors that might otherwise occur during data transcription (Bolger et al., 2003). The use of an electronic diary required that participants have regular nightly access to the internet, which may have limited our sample to families of higher socioeconomic status.

However, this study is a first attempt to collect normative data in a large sample and future work should pursue recruitment of families without internet access to further increase generalizability.

Lastly, we examined the variability of preschool depressive symptoms in a low-risk community sample. Assessing variability in a community sample is crucial to providing a developmental perspective on these common depressive behaviors in young children. Although stability of depressive mood and behaviors over a two-week period is inherent in the diagnosis of depression (APA, 2013), understanding variability in a community sample of preschoolers is a necessary precursor to assessing how this variability or stability may differ in a clinical population.

Data Analysis Plan

To examine the influence of both between-person and within-person predictors of children's daily sadness and irritability, we used generalized linear mixed models (GLMM; Aiken, Mistler, Coxe, & West, 2015), an extension of multilevel modeling used for nonlinear outcomes. GLMM accounts for the within-person correlations among observations present in nested count data, while also allowing for examination of two or more levels of data and modeling of alternative covariance structures. GLMM uses all available data as well as maximum likelihood to estimate conditional parameters and impute missing data (Willett, Singer, & Martin, 1998), avoiding listwise deletion and its associated reduction in power. Using the GENLINMIXED procedure in SPSS v. 22 (Heck, Thomas, & Tabata, 2012), we tested models with various distributions. Due to evidence of overdispersion in the non-continuous dependent variables, we chose to specify a negative binomial distribution in the GLMM models (Hox, 2010). Robust estimation of fixed and random coefficients was used to handle violations of model assumptions with count data (Hox, 2010).

A major advantage of multilevel modeling is the ability to disaggregate between-person and within-person effects. To assess between-person variation, we used grand-mean centering for which sadness and irritability were each averaged across the 14 diary days for each person. To assess within-person effects, we used person-mean centering for which each child's daily sadness and irritability was centered on his or her respective mean value (person-centered). Each of the 14 daily sadness or irritability scores thus reflected a difference score from the child's overall individual mean level across 14 days; this person-centered approach only reflects within-person temporal change and removes all between-person variance (Enders & Tofighi, 2007; Raudenbush & Bryk, 2002).[1]

Parameter estimates using the negative binomial distribution reflected the predicted log odds of the outcome variable when all other predictors in the model were held constant. We calculated an incidence rate ratio (IRR) using exponentiation (exponentiated beta = e^{β}), which reflected the relative increase in the dependent variable associated with one standard deviation increase in the predictor. Separate GLMM models were estimated for children's sadness and irritability as the dependent variables, and both between-person and within-person sadness and irritability were examined. In all models, we allowed intercepts to vary randomly across individuals and specified an autoregressive (AR1) covariance structure for the repeated effect.[2]

We first examined associations between all major study variables and children's average sadness and irritability across all 14 days. Next, we estimated unconditional models for daily sadness and daily irritability to assess the proportion of the variance attributable to between-

[1] One participant completed only one daily diary, and thus within-person effects were able to be examined for 290 participants, whereas between-person effects were able to be examined for 291 participants.
[2] Prior work has identified the need for optimal modeling of nested data using correct covariance structures (e.g., Singer & Willett, 2003). We thus examined multiple covariance structure specifications by comparing Akaika's information criterion (AIC) and Bayesian information criterion (BIC) estimates; they had little effect on the fixed and random parameter estimates or levels of significance. Covariances were modeled as independent by using the scaled identity covariance structure when models did not converge.

person versus within-person effects. Third, we examined associations between children's daily sadness and irritability and potential covariates in GLMM models. Child age, sex, race/ethnicity, parent education, parent marital status, and total time spent away from parent were examined as potential covariates. Significant covariates were included in their respective sadness and irritability models (both concurrent and prospective).

Fourth, we examined same day (concurrent) associations between level-1 predictors and children's daily sadness in separate models. All level-1 predictors were parsed into between-person (mean-centered) and within-person (person-centered) effects in these models. We first examined how same day irritability was associated with same day sadness. The equation representing concurrent associations between irritability and sadness is described below:

Level 1:

$$\eta_{ij}(\text{Daily sadness}) = \beta_{0j} + \beta_{1j}(\text{Person-centered daily irritability}) + r_{ij}$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Mean-centered daily irritability}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

where *ij* reflects day *i* for person *j*, and $\eta_{ij} = \ln(\lambda_{ij})$. We then examined associations between same day sleep quality and parent-child relationship functioning and same day sadness in separate models. These concurrent analyses retained same day irritability in the models as a covariate to better understand the specificity of associations with daily sadness. For concurrent models, sleep quality reflected the child's sleep quality the night the diary was completed. Similar models were estimated with daily irritability as the dependent variable and level-1 variables (same day sadness, sleep quality, parent-child relationship functioning) as predictors in separate models.

Same day sadness was retained as a covariate in models with daily irritability as the dependent variable.

Fifth, we examined prospective associations in separate models predicting both next day sadness and irritability. For these analyses, we lagged sadness and irritability by one day, such that children's prior day sadness or irritability (*i* - 1*)* predicted their next day sadness or irritability (*i*). These analyses allowed us to examine the prospective effects of prior day events on next day outcomes and reduced vulnerability to reverse causation. In the first model, we assessed whether prior day sadness predicted next day sadness when controlling for prior day irritability, which provided an estimate of the stability of sadness from one day to the next. In this same model, we also examined whether prior day irritability predicted next day sadness, controlling for prior day sadness. The equation for this model (other covariates not listed) is:

Level 1:

$$\eta_{ij}(\text{Next day sadness}_i) = \beta_{0j} + \beta_{1j}(\text{Prior day person-centered daily sadness}_{i\text{-}1}) + \beta_{2j}(\text{Prior day person-centered daily irritability}_{i\text{-}1}) + r_{ij}$$

Level 2:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\text{Prior day mean-centered sadness}_{i\text{-}1}) + \gamma_{02}(\text{Prior day mean-centered irritability}_{i\text{-}1}) + u_{0j}$$

$$\beta_{1j} = \gamma_{10}$$

$$\beta_{2j} = \gamma_{20}$$

where *ij* reflects day *i* for person *j*, *i* reflects next day behaviors, *i*-1 reflects prior day behaviors, and $\eta_{ij} = \ln(\lambda_{ij})$. We also examined whether prior night sleep quality and prior day parent-child relationship functioning predicted next day sadness. Identical models were also run to examine how prior day sadness and irritability prospectively predicted next day irritability, and whether

prior night sleep quality and prior day parent-child relationship functioning predicted next day irritability when controlling for prior day sadness. As with the concurrent analyses described above, all level-1 predictors were parsed into between-person (mean-centered) and within-person (person-centered) effects for these prospective models.

Lastly, we examined level-1 variables (sleep quality, parent-child relationship functioning) and level-2 variables (child age, child sex, average daily sadness, average daily irritability, less common depressive symptoms, ECI psychiatric symptoms, baseline impairment) as moderators of the prospective associations of sadness with next day sadness and irritability with next day irritability. Sadness was included as a covariate in models examining irritability and vice versa. As in the prospective models discussed above, sadness and irritability were lagged such that prior day sadness or irritability predicted next-day sadness or irritability, respectively. Slopes were allowed to randomly vary across participants. Moderation analyses involving child age, child sex, average daily sadness, average daily irritability, less common depressive behaviors, co-occurring psychiatric symptoms, and baseline impairment (level-2 variables) reflected a cross-level interaction with children's daily sadness and irritability (level-1 variables), whereas moderation analyses involving daily sleep quality and daily parent-child relationship functioning (level-1 variables) reflected within-person interactions with children's daily sadness and irritability (level-1 variables). Daily sleep quality and daily parent-child relationship functioning were parsed into between-person and within-person effects, and both effects were examined as moderators. Average daily sadness and irritability were examined as moderators of only the within-person association of sadness and irritability from one day to the next. Significant interactions were probed using simple slopes analyses (Aiken & West, 1991; Curran, Bauer, & Willoughby, 2006).

Chapter 3: Results

Frequencies of daily depressive behaviors are reported in Table 2. Of the diaries completed, only 2.80% of values were missing. Associations between major study variables are presented in Table 3. Children's average daily sadness and irritability were positively correlated and each was positively correlated with the occurrence of other less common depressive behaviors, including low self-esteem, fatigue, and changes in appetite/weight, sleep habits, activity levels, and concentration, and ECI psychiatric symptoms. Children's average daily sadness and irritability were also inversely associated with their average daily sleep quality and average daily parent-child relationship functioning. In addition, we observed associations of children's average daily sadness and daily irritability with several demographic characteristics. Younger children demonstrated greater average daily sadness and irritability than older children. Females demonstrated greater average daily sadness, $t(3345.55) = -3.74$, $p < .001$, and greater average daily irritability, $t(3719.84) = -2.59$, $p = .01$, than males. Children of non-Hispanic White race/ethnicity demonstrated greater average daily sadness compared to children of non-White or Hispanic race/ethnicity, $t(3504.11) = -4.34$, $p < .001$. Children with at least one parent holding a 4-year college degree demonstrated greater average daily sadness than children of parents with less than a 4-year college degree, $t(3503) = -3.22$, $p = .001$. In addition, children whose parents were married/living together demonstrated greater average daily irritability than children whose parents were not married/living together, $t(3821) = -4.29$, $p < .001$. Lastly, children who spent more time outside the home were reported by their parents to demonstrate less average daily sadness and irritability, likely due to less contact the parent had with the child to witness affective displays.

Daily sadness and irritability

Unconditional models for both children's daily sadness and irritability indicated that 64.0% of the variance in daily sadness was attributable to between-person factors and thus 36.0% was attributable to within-person factors; 67.6% of the variance in daily irritability was attributable to between-person factors and thus 32.4% was attributable to within-person factors.[3] These results support the disaggregation of between-person and within-person effects (Curran & Bauer, 2011). Variance and covariance results demonstrated significant within-person variation across days (AR1 diagonal) as well as significant between-person variation (intercept variance) (*p*s < .001) for both the unconditional sadness and unconditional irritability models (*p*s < .001).

We next examined whether potential covariates were associated with children's daily sadness and irritability. In these GLMM models, children's daily sadness and irritability served as dependent variables in separate models, and potential demographic covariates were included as predictors. Higher levels of children's daily sadness were significantly associated with younger child age (*b* = -.19, *SE* = .06, Exp(*b*) = .83, *p* = .003), having at least one parent with a four-year college degree (*b* = .43, *SE* = .14, Exp(*b*) = 1.54, *p* = .003), and less time the child spent outside the home (*b* = -.08, *SE* = .03, Exp(*b*) = .92, *p* = .002), and thus these variables were included as covariates in all concurrent and prospective sadness models. Higher levels of children's daily irritability were significantly associated with younger child age (*b* = -.15, *SE* = .07, Exp(*b*) = .86, *p* = .02), having parents who were married/living together (*b* = .63, *SE* = .19, Exp(*b*) = 1.88, *p* = .001) and less time the child spent outside the home (*b* = -.11, *SE* = .03,

[3] Although we examined composite sadness and irritability scores given overlap between sadness and tearfulness and tantrums and irritability, respectively, we also investigated the ICCs of each of these separate behaviors. Results indicated that 50.5% of the variance in daily sadness and 50.6% of the variance in daily tearfulness were attributable to between-person factors and thus 49.5% and 49.4% were attributable to within-person factors for daily sadness and tearfulness, respectively. Results also indicated that 68.4% of the variance in daily irritability and 80.2% of the variance in daily tantrums were attributable to between-person factors and thus 31.7% and 19.8% were attributable to within-person factors for daily irritability and temper tantrums, respectively.

Exp(*b*) = .90, $p < .001$), and thus these variables were included as covariates in all concurrent and prospective irritability models.

Same day associations with sadness and irritability

We examined same day effects of level-1 variables on sadness and irritability in separate models. As seen in Table 4, children with greater irritability relative to the sample mean (between-person) demonstrated greater same day sadness, and children with greater irritability on a given day relative to their own mean (within-person) demonstrated greater same day sadness.

Neither between-person nor within-person sleep quality (same day) was associated with children's same day sadness or irritability (*p*s > .12) (Table 5). In contrast, better parent-child relationship functioning on a given day relative to both the sample mean (between-person) and the child's own mean (within-person) was associated with less same day sadness and irritability (Table 6).

Prospective associations with sadness and irritability

We examined prospective associations between sadness and irritability across days and observed differential between-person and within-person associations (Table 7). Specifically, we found positive between-person associations between children's sadness and irritability on the prior day and their next day sadness and irritability, respectively, indicating between-person stability in these depressive behaviors across diary days. Further, we observed negative within-person associations between prior day sadness and irritability and next day sadness and irritability, respectively, indicating within-person variability in these depressive behaviors across diary days. Between-person, but not within-person, irritability positively predicted next day sadness, whereas neither between-person nor within-person sadness predicted next day

irritability. Taken together, these findings indicate between-person stability, but within person variability, of both sadness and irritability, as well as prospective associations between prior day between-person irritability and next day sadness across diary days.

We also examined whether prior night sleep quality or prior day parent-child relationship functioning predicted sadness and irritability the next day. Neither between-person nor within-person child sleep quality the prior night significantly predicted children's next day sadness or irritability (*p*s > .11). Neither between-person nor within person parent-child relationship functioning on the previous day predicted next day sadness, nor did between-person parent-child relationship functioning on the prior day predict next day irritability (*p*s > .26); however, greater next day irritability was predicted by poorer parent-child relationship functioning the previous day relative to the child's own mean (within-person) (b = -.07, SE = .01, Exp(b) = .94, p < .001).

Moderators of day-to-day variability of sadness and irritability

Child age. We examined whether child age significantly moderated the between-person and within-person associations of sadness and irritability from one day to the next. Child age significantly moderated the between-person, but not within-person, association of sadness from one day to the next (Table 8). Greater sadness the prior day relative to the sample mean was associated with greater sadness the following day, but this association was stronger for older preschoolers (b = .83, SE = .08, Exp(b) = 2.29, p < .001) than for younger preschoolers (b = .53, SE = .13, Exp(b) = 1.70, p < .001). Child age did not significantly moderate the between-person or within-person associations of irritability from one day to the next (Table 8).

Child sex. We examined whether child sex significantly moderated the between-person and within-person associations of sadness and irritability from one day to the next. As seen in Table 9, child sex significantly moderated both the between-person and the within-person

associations of sadness from one day to the next. Greater sadness the prior day relative to the sample mean was associated with greater sadness the following day, and this association was stronger for males (b = 1.02, SE = .09, Exp(b) = 2.78, p < .001) than for females (b = .54, SE = .14, Exp(b) = 1.72, p < .001). However, greater sadness the prior day relative to the child's own mean was associated with less sadness the following day, and this association was stronger for males (b = -.15, SE = .04, Exp(b) = .86, p < .001) than for females (b = -.06, SE = .02, Exp(b) = .95, p = .004). As seen in Table 9, child sex significantly moderated the between-person, but not within-person, association of irritability from one day to the next. Greater irritability the prior day relative to the sample mean was associated with greater irritability the following day, and this association was stronger for males (b = .96, SE = .08, Exp(b) = 2.60, p < .001) than for females (b = .64, SE = .08, Exp(b) = 1.90, p < .001).

Average daily sadness and irritability. We tested whether children's average sadness and average irritability moderated the day-to-day within-person variability of sadness and irritability. The within-person association of sadness from one day to the next was not significantly moderated by children's average daily sadness (b = .001, SE = .003, p = .72).[4] However, children's average daily irritability did significantly moderate the within-person association of sadness from one day to the next (b = .04, SE = .01, Exp(b) = 1.04, p < .001). Greater sadness the prior day relative to the child's own mean was associated with less sadness the following day, and this association was stronger for children with low average daily irritability (b = -.19, SE = .02, Exp(b) = .83, p < .001) than for children with high average daily irritability (b = -.12, SE = .01, Exp(b) = .89, p < .001). The within-person association of

[4] The model examining average daily sadness as a moderator of the within-person variability of children's sadness did not converge when using the AR1 covariance structure; thus, a scaled identity covariance structure was applied to make covariances between days independent and to constrain variances to be constant.

irritability from one day to the next was not significantly moderated by children's average daily sadness (b = .01, SE = .02, p = .79), but was significantly moderated by children's average daily irritability (b = .06, SE = .01, Exp(b) = 1.06, p < .001). Greater irritability the prior day relative to the child's own mean was associated with less irritability the following day, and this association was stronger for children with low average daily irritability (b = -.29, SE = .04, Exp(b) = .75, p < .001) than for children with high average daily irritability (b = -.18, SE = .03, Exp(b) = .84, p < .001).

Less common depressive behaviors. We examined whether the occurrence of less common depressive behaviors across the 14-day daily diary assessment moderated prospective associations of between-person and within-person sadness and irritability from one day to the next.

The prospective between-person association of prior day sadness with next day sadness was moderated by the occurrence of low interest (b = .18, SE = .09, Exp(b) = 1.20, p = .05), changes in the ability to concentrate (b = .24, SE = .12, Exp(b) = 1.28, p = .03), and changes in appetite/weight (b = -.17, SE = .05, Exp(b) = .85, p = .001). Specifically, greater sadness relative to the sample mean was associated with greater sadness the following day, and this association was stronger for children with the occurrence of low interest (b = .86, SE = .15, Exp(b) = 2.36, p < .001) than children without the occurrence of low interest (b = .68, SE = .16, Exp(b) = 1.97, p < .001), for children with the occurrence of changes in the ability to concentrate (b = .92, SE = .15, Exp(b) = 2.52, p < .001) than for children without the occurrence of changes in the ability to concentrate (b = .68, SE = .15, Exp(b) = 1.97, p < .001), and for children without the occurrence of changes in appetite/weight (b = .70, SE = .15, Exp(b) = 2.00, p < .001) than for children with the occurrence of changes in appetite/weight (b = .53, SE = .15, Exp(b) = 1.70, p < .001).The

prospective within-person association between prior day sadness and next day sadness was not significantly moderated by any less common depressive symptoms (*p*s > .13).

We also observed that the following less common depressive behaviors significantly moderated the prospective between-person associations of prior day irritability with irritability the following day: thoughts of death (b = -.15, SE = .03, Exp(b) = .86, p < .001), low self-esteem (b = -.21, SE = .03, Exp(b) = .81, p < .001), and changes in the ability to concentrate (b = -.15, SE = .05, Exp(b) = .86, p = .004). Greater irritability relative to the sample mean was significantly associated with greater prospective irritability the following day, and this relation was stronger for children without the occurrence of thoughts of death (b = .75, SE = .08, Exp(b) = 2.11, p < .001) than for children with the occurrence of thoughts of death (b = .60, SE = .07, Exp(b) = 1.82, p < .001), for children without the occurrence of low self-esteem (b = .77, SE = .06, Exp(b) = 2.16, p < .001) than for children with the occurrence of low self-esteem (b = .56, SE = .07, Exp(b) = 1.75, p < .001), and for children without the occurrence of changes in the ability to concentrate (b = .75, SE = .08, Exp(b) = 2.12, p < .001) than for children with the occurrence of changes in the ability to concentrate (b = .60, SE = .10, Exp(b) = 1.82, p < .001).

The prospective within-person association between prior day irritability and irritability the next day was moderated by changes in appetite/weight (b = .11, SE = .04, Exp(b) = 1.12, p = .01). Greater irritability the previous day relative to the child's own mean was associated with less irritability the following day for children without the occurrence of changes in appetite/weight (b = -.09, SE = .02, Exp(b) = .91, p < .001), whereas this association was not significant for children with the occurrence of changes in appetite/weight (b = .02, SE = .04, p = .59).

Baseline psychiatric symptoms. We assessed whether children's baseline psychiatric symptoms (depression, ODD, ADHD, anxiety) moderated prospective associations of between-person and within-person sadness and irritability from one day to the next.

The prospective between-person associations between prior day sadness and sadness the following day was significantly moderated by children's baseline depression symptoms (Table 10). Greater sadness the prior day relative to the sample mean was associated with greater sadness the following day, but this association was stronger for children low in baseline depression symptoms (b = .97, SE = .10, Exp(b) = 2.63, p < .001) than children high in baseline depression symptoms (b = .54, SE = .15, Exp(b) = 1.72, p < .001). The prospective between-person association between prior day sadness and next day sadness was not significantly moderated by children's baseline ODD, ADHD, or anxiety symptoms (ps > .09).

The prospective within-person association between prior day sadness and next day sadness was significantly moderated by children's baseline depression symptoms (Table 10) and ODD symptoms (Table 11). Greater sadness the prior day relative to the child's own mean was associated with less sadness the following day for children low in ECI depression symptoms (b = -.08, SE = .03, Exp(b) = .92, p = .01), but this association was not significant for children high in depression symptoms (b < .001, SE = .01, p = .98). Similarly, greater sadness the prior day relative to the child's own mean was associated with less sadness the following day for children low in baseline ODD symptoms (b = -.15, SE = .02, Exp(b) = .86, p < .001), but this association was not significant for children high in ODD symptoms (b = -.05, SE = .03, p = .08). The prospective within-person association of prior day sadness with next day sadness was not significantly moderated by children's ADHD or anxiety symptoms (ps >.23).

The between-person association between prior day irritability and next day irritability was significantly moderated by children's baseline depression symptoms (Table 10) and ODD symptoms (Table 11). Specifically, greater irritability relative to the sample mean was associated with greater prospective irritability the following day, and this association was stronger for children with low baseline depression symptoms (b = 1.05, SE = .08, Exp(b) = 2.86, p < .001) than for children with high baseline depression symptoms (b = .61, SE = .04, Exp(b) = 1.83, p < .001), and for children with low baseline ODD symptoms (b = .98, SE = .06, Exp(b) = 2.67, p < .001) than for children with high baseline ODD symptoms (b = .64, SE = .03, Exp(b) = 1.89, p < .001). The between-person association between prior day irritability and next day irritability was not significantly moderated by children's baseline ADHD or anxiety symptoms (ps > .33).

The prospective within-person association between prior day irritability and next day irritability was also significantly moderated by children's baseline ODD symptoms (Table 11). Greater irritability the prior day relative to the child's own mean was associated with less irritability the following day, and this association was stronger for children with low baseline ODD symptoms (b = -.20, SE = .04, Exp(b) = .82, p < .001) than for children with high baseline ODD symptoms (b = -.10, SE = .02, Exp(b) = .90, p < .001). The prospective within-person association between prior day irritability and next day irritability was not significantly moderated by children's baseline depression, ADHD or anxiety symptoms (ps > .33).

Baseline impairment. We assessed whether children's average IRS score, a measure of baseline impairment, moderated prospective associations of between-person and within-person sadness and irritability from one day to the next. The prospective between-person association between prior day sadness and sadness the following day was not significantly moderated by children's average IRS scores; however, the prospective within-person association between prior

day sadness and sadness the following day was significantly moderated by children's average IRS scores (Table 12). Greater sadness relative to one's own mean the prior day was associated with less sadness the following day, but this association was stronger for children with lower average IRS scores (b = -.16, SE = .02, Exp(b) = .85, p < .001) then for children with higher average IRS scores (b = -.08, SE = .02, Exp(b) = .92, p < .001).

The prospective between-person, but not within-person, association between prior day irritability and irritability the following day was significantly moderated by children's average IRS scores (Table 12). Greater irritability the previous day relative to the sample mean was associated with greater irritability the following day, but this association was stronger for children with lower average IRS scores (b = .94, SE = .08, Exp(b) = 2.55, p < .001) than for children with higher average IRS scores (b = .65, SE = .08, Exp(b) = 1.92, p < .001).

Daily sleep quality. We assessed whether between-person and within-person sleep quality the prior night moderated the prospective associations of between-person and within-person sadness and irritability from one day to the next. As seen in Table 13, between-person sleep quality of the prior night significantly moderated the between-person, but not within-person, association between children's prior day sadness and next day sadness. Greater sadness the prior day relative to the sample mean was associated with greater sadness the following day, and this association was stronger for children with better sleep quality the prior night relative to the sample mean (b = .96, SE = .09, Exp(b) = 2.61, p < .001) than for children with poorer sleep quality the prior night relative to the sample mean (b = .54, SE = .19, Exp(b) = 1.71, p = .004). Within-person sleep quality of the prior night did not significantly moderate the between-person or within-person associations between children's prior day sadness and next day sadness.

As seen in Table 13, between-person sleep quality the prior night did not significantly moderate the between-person or within-person associations between children's prior day irritability and next day irritability. However, within-person sleep quality of the prior night significantly moderated the between-person, but not within-person, association between prior day irritability and next day irritability. Greater irritability the prior day relative to the sample mean was associated with greater irritability the following day, but this association was stronger for children with better sleep quality the prior night relative to the child's own mean (b = .77, SE = .09, Exp(b) = 2.15, p < .001) than for children with poorer sleep quality the prior night relative to the child's own mean (b = .73, SE = .09, Exp(b) = 2.08, p < .001).

Daily parent-child relationship functioning. Lastly, we examined whether between-person and within-person daily parent-child relationship functioning moderated the prospective associations of between-person and within-person sadness and irritability from one day to the next. As seen in Table 14, prior day parent-child relationship functioning relative to the sample mean significantly moderated the between-person and within-person associations between prior day sadness and children's next day sadness. Greater sadness the prior day relative to the sample mean was associated with greater prospective sadness the following day, and this association was stronger for children with better parent-child relationship functioning relative to the sample mean the previous day (b = 1.19, SE = .07, Exp(b) = 3.28, p < .001) than for children with poorer parent-child relationship functioning the previous day relative to the sample mean (b = .73, SE = .04, Exp(b) = 2.07, p < .001). Greater sadness the prior day relative to the child's own mean was associated with less sadness the following day, but this association was stronger for children with better parent-child relationship functioning the prior day relative to the sample mean (b = -.14,

SE = .03, Exp(*b*) = .87, *p* < .001) than for children with poorer parent-child relationship functioning the prior day relative to the sample mean (*b* = -.08, *SE* = .02, Exp(*b*) = .92, *p* < .001).

As seen in Table 14, prior day parent-child relationship functioning both relative to the sample mean and relative to the child's own mean significantly moderated the between-person association between prior day irritability and next day irritability. Greater irritability the prior day relative to the sample mean was associated with greater prospective irritability the following day, and this association was stronger for children with better parent-child relationship functioning the previous day relative to the sample mean (*b* = 1.01, *SE* = .08, Exp(*b*) = 2.74, *p* < .001) than for children with poorer parent-child relationship functioning the previous day relative to the sample mean (*b* = .63, *SE* = .05, Exp(*b*) = 1.88, *p* < .001). In contrast, the prospective association between prior day irritability relative to the sample mean and irritability the following day was stronger for children with poorer parent-child relationship functioning the previous day relative to the child's own mean (*b* = .85, *SE* = .06, Exp(*b*) = 2.33, *p* < .001) than for children with better parent-child relationship functioning the previous day relative to the child's own mean (*b* = .80, *SE* = .05, Exp(*b*) = 2.21, *p* < .001).

Although prior day parent-child relationship functioning relative to the sample mean did not moderate the between-person association of irritability from one day to the next, it did significantly moderate the within-person association of irritability from one day to the next. Greater irritability the previous day relative to the child's own mean was associated with less irritability the following day, and this association was stronger for children with better parent-child relationship functioning the previous day relative to the sample mean (*b* = -.18, *SE* = .04, Exp(*b*) = .83, *p* < .001) than for children with poorer parent-child relationship functioning the previous day relative to the sample mean (*b* = -.10, *SE* = .02, Exp(*b*) = .91, *p* < .001).

Chapter 4: Discussion

The present study examined concurrent and prospective associations between children's daily sadness and irritability, their concurrent and prospective associations with child sleep quality and parent-child relationship functioning, and moderators of variability in children's daily sadness and irritability over a 14-day diary period. We found that between-person and within-person sadness and irritability were positively associated with same day and next day irritability and sadness, respectively. Results also demonstrated between-person stability, but within-person variability, in children's daily sadness and irritability. Moreover, poorer parent-child relationship functioning, but not sleep quality, was associated with greater concurrent and prospective sadness and irritability. In addition, we found that demographic factors (i.e., child age, sex) and factors related to child functioning (i.e., less common depressive behaviors, average irritability, baseline psychiatric symptoms and impairment, sleep quality, and parent-child relationship functioning) moderated the between-person and within-person associations of sadness and irritability from day to day. To our knowledge, this is the first study to examine daily patterns in sadness and irritability and factors related to their variability across days in order to gain an understanding of the phenomenology of depressive behaviors in young children.

Concurrent and prospective associations with sadness and irritability

Consistent with our hypotheses, our findings demonstrated that sadness and irritability co-occurred and significantly predicted both sadness and irritability the following day, indicating both between-person stability and within-person variability in these common depressive behaviors. The extant literature has documented that approximately one-third of children ages 9-16 with depression demonstrate both sadness and irritability (Stringaris et al., 2013), and our findings suggest that these common behaviors also frequently co-occur in a community sample

of preschool-aged children. The observation of between-person stability in young children's sadness and irritability demonstrates that children maintain their standing relative to their peers across a two-week period. Thus, children who demonstrate greater sadness or irritability on a given day relative to their peers continue to demonstrate greater sadness or irritability compared to their peers on subsequent days. Similarly, children who demonstrate lower sadness or irritability on a given day relative to their peers continue to demonstrate lower sadness or irritability than their peers on subsequent days. The between-person approach to understanding depressive behaviors can provide useful information regarding how children compare to one another. Further, gaining an understanding of between-person patterns in daily sadness and irritability reflects an important first step in developing norms for depressive behaviors in young children, knowledge critical to determining whether behavior may be typical or atypical.

In addition, we observed within-person variability in preschoolers' sadness and irritability across diary days, consistent with prior work documenting similar effects in adults (e.g., Blaxton et al., 2017; Fuller-Tyszkiewicz et al., 2017; Galambos et al., 2009; McCrae et al., 2008) and older youth (Könen et al., 2015). The observed within-person variability in sadness and irritability supports Luby's (2002) proposed *DSM* criteria modification that depressive symptoms may be less persistent in young children. Indeed, decreased persistence of depressive behaviors may manifest as greater within-person variability of sadness and irritability across days, underscoring the need for developmental sensitivity in assessing preschool depression.

Greater variability in daily sadness and irritability may be normative during early childhood for several reasons. First, although preschool-aged children demonstrate the ability to engage in emotion regulation (e.g., Carlson & Wang, 2007; Cole, Dennis, Smith-Simon, & Cohen, 2009), cognitive capacities to change and regulate emotion become more sophisticated as

children get older (López-Pérez, Wilson, Dellaria, & Gummerum, 2016; Thompson, 2011; Zimmerman & Iwanski, 2014) and thus preschoolers' attempts to engage in self-initiated strategies of emotion regulation may be less effective and emotion regulation may be more contingent on parental responses and environmental factors (e.g., Fabes, Leonard, Kupanoff, & Martin, 2001). During early childhood, children rely more heavily on external sources for emotion regulation, including parents, teachers, and other attachment figures whom can also serve as "emotion coaches" (Denham & Kochanoff, 2002; Gottman, Katz, & Hooven, 1997; Phillips & Shonkoff, 2000; Thompson & Meyer, 2007; Zimmer-Gembeck & Skinner, 2011). This reliance on external sources for emotion regulation may thus contribute to variability in child depressive behaviors during the preschool years. Second, preschoolers may be less likely to engage in cognitive processes that prolong negative affect states, such as rumination and guilt, resulting in greater variability in depressive behaviors.

Third, young children do not have control over many aspects of their environment, which may increase their emotional sensitivity to context. In this way, contextual factors such as parents, siblings, sleep, and school can serve as "provocation ecologies" (Whalen et al., 2006) that increase the frequency of depressive behaviors. Our findings support the parent-child relationship as a "provocation ecology" given concurrent and prospective associations between child daily sadness and irritability and parent-child relationship functioning. However, in addition to reflecting social functioning, variability in preschool depressive behaviors may reflect transient emotional responses or responses to chronic stressors in the child's environment. In adults, daily stressors have been found to predict greater fluctuations in depressive symptoms assessed over 35 days (Hankin, 2010), which may suggest that the observed variability in preschool sadness and irritability is indicative of a normative, transient response to daily

stressors. It is important to note, however, that other external factors such as chaotic home environments or inconsistent parenting may also contribute to variability in children's daily depressive behaviors and thus future work is needed to examine other contextual contributors to variability. Nevertheless, our results suggest that within-person variability may be more normative during early childhood, though further work is needed to determine whether extreme variability may be maladaptive.

Concurrent and prospective associations with parent-child relationship functioning

We found that parent-child relationship functioning was associated with concurrent and prospective sadness and irritability. This finding is consistent with prior work documenting links between negative interpersonal events with parents and greater negative affect the same day in adolescents (Herres et al., 2016). Days characterized by better parent-child interactions were associated with fewer instances of child sadness and irritability, whereas days characterized by poorer parent-child interactions were associated with more instances of child sadness and irritability. Further, we observed evidence of "spillover" effects from one day to the next, with greater within-person irritability the prior day predicting poorer parent-child relationship functioning the subsequent day over and above the effect of prior day parent-child relationship functioning. In combination with prior work demonstrating that the parent-child relationship may serve as a stressor or a buffer for child depression (McLeod et al., 2007; Steinberg, 2001; Steinberg & Morris, 2001), our findings raise the possibility of a bidirectional link between child depressive behaviors and the parent-child relationship given that child irritability negatively predicted parent-child relationship functioning the next day, though many child and adult factors likely contribute to this dynamic. Greater child negative affect may result in more challenging parenting and thus greater tension within the parent-child relationship. In turn, tension can lead

to greater child negative affect, particularly given that interpersonal stressors are more strongly linked to negative affect reactivity and depression risk than are non-interpersonal stressors (Charbonneau et al., 2009; O'Neill et al., 2004). As preschoolers spend more time with caregivers than do older children, a greater understanding of associations between parent-child functioning and child depressive behaviors may clarify precursor patterns of risk for depression in the early childhood period.

Concurrent and prospective associations with sleep quality

Surprisingly, we did not observe same day or next day associations between preschoolers' daily sadness and irritability and sleep quality. Our findings are consistent with some prior work demonstrating that daily affect did not predict same night sleep quality in adults or children (Bouwmans et al., 2016; Galambos et al., 2009; Könen et al., 2016), and that sleep quality did not prospectively predict next-day affect (Kalmbach et al., 2014), though other prior work has found significant links between the two (Kalmbach et al., 2017; Sin et al., 2017). Especially in young children, the duration of negative affect may be short-lived and therefore may not hold significant implications for arousal or relaxation at bedtime affecting sleep quality. The link between negative affect and sleep quality may also depend on the timing and intensity of the negative emotion. Greater negative affect closer to bedtime may be more strongly tied to sleep quality than affect occurring earlier in the day. More intense negative emotion earlier in the day may contribute to greater fatigue and better sleep quality, whereas more intense emotion closer to bedtime might result in greater arousal and compromise sleep quality. Further, given that preschoolers rely on external sources of emotion regulation, it is possible that their sleep quality is less likely to be tied to next day emotion than in older children and adults.

Preschool sleep quality may also be affected by naps taken earlier in the day. Napping and greater duration of daytime naps have been associated with decreased nighttime sleep duration, increased sleep latency, and more nighttime awakenings in toddlers and preschoolers (Akacem et al., 2015; Lam, Mahone, Mason, & Scharf, 2011; Ward, Gay, Anders, Alkon, & Lee, 2008; for a review, see Thorpe et al., 2015). Moreover, prior work demonstrates links between nap deprivation and greater emotional bias to positive and negative stimuli in preschoolers (ages 3-5.75) (Cremone, Kurdziel, Fraticelli-Torres, McDermott, & Spencer, 2017), as well as self-regulation in toddlers (ages 2.5-3) (Miller, Seifer, Crossin, & Lebourgeois, 2015). It is possible that successful napping in preschool-aged children replenishes children's emotional resources needed to manage demands of the day. Given that younger preschoolers take longer naps than older preschoolers (Lam et al., 2011; Ward et al., 2008), taking a nap and the length of the nap may relate more to the current day's emotions for younger preschoolers and future studies should incorporate assessment of daytime naps as well as other measures of sleep, such as actigraphy, which are more sensitive and can provide more objective and reliable information related to child sleep quality and duration throughout the day.

Moderators of the stability/variability of children's sadness and irritability

We next observed significant moderators of the between-person associations of sadness and irritability from one day to the next, indicating factors that increase affective stability relative to one's peers. Examining moderators of between-person stability is a crucial step in understanding children who may be more at risk for the development of depression. We found that the between-person stability in children's daily sadness and irritability was stronger for: older preschoolers, males, those without the presence of many of the less common depressive symptoms, those with low baseline depression and ODD symptoms, those with low baseline

impairment, and those with better between-person and within-person sleep quality and parent-child relationship functioning. Overall, findings provide evidence for greater between-person stability in common depressive behaviors for preschoolers with better functioning. Regardless of whether a child's daily sadness or irritability was higher or lower than that of his or her peers on a given day, children with higher functioning were more likely to maintain this position (higher/lower) relative to their peers over the course of fourteen days. Preschoolers with higher functioning may be less reactive to their environments, increasing their relative affective stability. It is also possible that higher-functioning children live in more stable environments (Dumas et al., 2005; Coldwell et al., 2006; Fiese & Winter, 2010), allowing for greater stability relative to peers who may live in less stable environments.

However, we observed a few exceptions to this pattern: between-person stability in sadness was stronger for children with the presence of low interest and changes in concentration relative to children who did not experience these less common depressive behaviors. We are cautious in interpreting these findings. Low interest and changes in concentration were low base rate behaviors in the sample and are difficult constructs for parents to observe and report for children. Replication of these effects is warranted in samples of children with higher levels of psychopathology and in which these symptoms can be verified by a clinician.

We found a similar pattern for moderators of the within-person variability of sadness and irritability from one day to the next. Identifying moderators of within-person variability is an approach of particular clinical significance, as it can aid in the recognition and mitigation of triggers of negative affect, as well as identify children who could benefit from early intervention. Within-person variability in daily sadness and irritability was stronger for: males, those with lower average irritability, those without the presence of changes in appetite/weight, those with

fewer baseline depression and ODD symptoms and lower baseline impairment, as well as those with better between-person parent-child relationship functioning. This pattern of findings is inconsistent with some prior work linking variability with poor outcomes in adolescents (Silk et al., 2003) and adults (Eid & Diener, 1999; Koval et al., 2013; Kuppen et al., 2007), and may instead provide support for the adaptive nature of affective variability in young children. By disaggregating between-person and within-person effects, we were able to examine the moderating effect of children's average sadness and irritability across the diary, an analysis of interest given that children who tend to experience greater negative emotion across a two-week period may differ in day-to-day variability from children who tend to experience less negative emotion across the same time period. Affective variability is expected to be more normative in preschoolers than in older youth and adults, and children in the current sample with less impairment demonstrated greater within-person variability. Indeed, this pattern was corroborated by the observation of greater within-person variability for children with lower average irritability. It is thus possible that children with better functioning demonstrate less chronic activation of negative mood, allowing for emotional flexibility and rebound.

With few exceptions, our findings demonstrate that preschool-aged children show between-person stability and within-person variability in their sadness and irritability from day-to-day across a two-week period, but that this pattern is stronger for older preschoolers, males, and children with better overall psychiatric functioning, sleep quality, and parent-child relationship functioning. While much of the previous work on affective variability has focused on between-person effects, our findings highlight the utility of examining effects at the within-person level as well. Better overall child functioning, sleep quality, and parent-child relationship functioning may be factors promoting emotion regulation in preschoolers, allowing them to

return to baseline after experiencing a day with negative emotion, in turn explaining the observed variability in negative affect. Variability in negative affect is particularly important in the *DSM* taxonomy given that current diagnostic criteria for depression involve experiencing symptoms of depression most of the day, nearly every day for two weeks. Thus, it may be assumed that those with a depressive disorder have more consistently high depressive mood, and while this is likely true for between-person effects (children compared to their peers), it is unknown what patterns of depressive symptoms look like within preschool-aged children across a two-week period. Based on the current findings, we might expect that preschoolers with clinical depression show less within-person variability from day to day. While the current sample was a low-risk sample and results provide some insight into normative patterns of depressive behavior in early childhood, findings cannot be generalized to children with poorer functioning or clinical samples. Future work is needed to examine these questions in clinical or higher-risk populations to further establish differences in the phenomenology of depressive behaviors between normative and clinically depressed samples.

Study strengths and limitations

The present study had several strengths. First, this is the first study to our knowledge to examine the day-to-day phenomenology of sadness and irritability in a preschool-aged sample. Sadness and irritability have been identified as two common depressive behaviors that are normative to a certain extent in young children (Bufferd et al., 2016, 2017; Deater-Deckard & Wang, 2012; Stingaris, 2011), yet no prior study has clarified their daily patterns and moderators of these patterns in early childhood. Our findings are a critical next step to identifying normative patterns of common behaviors in preschool-age children and set the foundation for future work examining differences between low-risk community samples and clinical samples. Second, we

examined children's depressive behaviors across a 14-day diary. By leveraging this daily tool, we were able to utilize advanced statistics and generalized multilevel modeling to disaggregate between-person and within-person effects. Importantly, our work demonstrates the critical need to disaggregate these effects given that they contributed to significant amounts of variance in the outcome and demonstrated different day-to-day patterns.

Third, our study used behavioral indicators to assess internal mood states. Externalizing problems demonstrate greater cross-informant agreement than internalizing problems (Achenbach, 2011; De Los Reyes & Kazdin, 2005; De Los Reyes et al., 2015), likely due to parents observing and reporting more externalizing symptoms in young children compared to internalizing symptoms. Particularly given the young age of children in our sample, asking parents to report on behavioral indicators of depression may have improved parental identification of markers of children's internalizing affect. Fourth, we implemented cut-off times for the parent daily diaries such that diaries completed after 12 PM the following day were not used in analyses. Using this cut-off time decreased the likelihood that parent retrospective report of the prior day's behaviors was influenced by the current day's behaviors.

This study also had limitations that future research should address. First, we asked parents to report on their child's daily behaviors and only collected this data from one reporter. Although we asked parents to check in with their child's teachers and caregivers to obtain additional information about the child's depressive behaviors, it is possible that the frequencies reported by parents were underestimated. We attempted to control for this by including time away from home as a covariate in all statistical analyses, but events occurring outside the context of parental supervision may be underrepresented. Moreover, children may be more willing to show certain behaviors with one caregiver rather than another and thus using only one reporter

may have masked important reporter discrepancies useful for assessment, classification, and treatment (Achenbach, 2006; De Los Reyes et al., 2005, 2013; Klein et al., 2005). Future work would benefit from assessment of child depressive behaviors from multiple caregivers across daily settings. In addition, future research may also benefit from the inclusion of child-reported symptoms, particularly given that preschoolers may be valid reporters of their own depressive symptoms (Luby, Belden, Sullivan, & Spitznagel, 2007).

Second, although evidence suggests a single question assessing child sleep quality is sufficiently reliable and valid (Fung, Nguyen, Moineddin, Colantonion, & Wiseman-Hakes, 2014), our measure may not have been sensitive enough to capture sleep-affect associations in young children, and thus future studies should incorporate other sleep measures such as actigraphy. In addition, we also did not assess napping, which affects children's sleep duration and quality (e.g., Akacem et al., 2015; Lam et al., 2011; Ward et al., 2008) as well as attentional control and self-regulation abilities (e.g., Cremone et al., 2017; Miller et al., 2015). Napping may also have greater ramifications for emotion variability in younger preschoolers who take longer naps relative to older preschoolers (Lam et al., 2011; Ward et al., 2008), and thus future studies should also incorporate assessment of napping throughout the day. Third, although the current sample was racially and ethnically diverse, limited diversity was observed in socioeconomic status and family structure. Future research should aim to examine these questions in a sample that is even more racially, ethnically, and socioeconomically diverse. Fourth, the current study examined moderators of the variability in child affect; however, these moderators may also interact to affect child emotion. For example, emerging work supports the interactive effect of family demands and adolescent sleep efficiency on adolescents' next day depressive symptoms (Chiang et al., 2017). It will be important for future work to consider these complex interactions

among moderating variables. Fifth, there were limitations to our administration of the daily diary. Although we attempted to limit the number of questions parents had to complete each day and used an electronic diary to increase convenience for participants, the study required access to a computer and the internet which may have precluded participation by more socioeconomically disadvantaged groups (Bolger et al., 2003). Further, participants may have demonstrated decreased attention and commitment to the diary over time given that the same questions were administered daily, and in the same order. Future studies should consider ways to make this diary more accessible to all populations and randomize questions order to reduce bias in participant responses (Bolger et al., 2003). Sixth, we assessed affective variability, which is just one of many indices of daily affective dynamics. Future studies should incorporate other metrics, such as emotional inertia or the mean of the squared successive differences (MSSD) approaches to better examine emotional amplitude, frequency, and temporal dependency (Ebner-Priemer et al., 2007).

Finally, we assessed children's depressive behaviors once daily. While we chose this approach to increase the feasibility of the study, decreasing resources needed and decreasing participant demand, it is possible that the day-level information collected may not have been fine-grained enough to understand the complex emotion dynamics occurring in early childhood. It will be important for future studies to incorporate network modeling of intra-individual time-series data to learn more about causal pathways (Epskamp et al., 2018) and EMA to gain a better understanding of these nuanced affective dynamics. The use of EMA would further reduce retrospective bias by decreasing the recall period, and more assessments would give greater information about the time course of depressive behaviors. This information may be particularly useful for examining within-day fluctuation and reactivity to daily events given evidence that

greater lag (>5 hours) between assessments is associated with decreased or non-significant effect sizes of predictors on depressed mood (Fuller-Tyszkiewicz et al., 2017). Furthermore, using EMA or a more sensitive time-series analysis can provide information about interactions between affective states. For example, positive emotions have been shown to occur more frequently and more intensely than negative emotions (Zelenski & Larsen, 2000) and prior work demonstrates that the temporal order of emotion change affects outcomes, with greater reductions in negative affect following increases in positive affect during the day (Wichers et al., 2007). Despite these limitations, the current study represents an increase in developmentally-sensitive assessment of preschool depression.

Conclusion

Advances in preschool mental health assessment have facilitated a greater understanding of developmental considerations for depression in early childhood. The extant literature has documented that sadness and irritability are common in early childhood, but that depression can be identified in the preschool period and is associated with impairment. However, little is known about the day-to-day phenomenology of depressive behaviors in young children. The current study elucidated the daily patterns of these common depressive symptoms in a sample of preschool-aged children and underscores the importance of developmentally-sensitive assessment. Interestingly, we found between-person stability but within-person variability of sadness and irritability in a community sample of preschoolers assessed over 14 consecutive days. Further, we found that children with better functioning demonstrated greater stability relative to their peers and greater variability relative to their own mean in sadness and irritability. Although the processes involved in daily emotion dynamics are likely complex, our findings provide some initial evidence for affective variability as a potentially adaptive response to one's

environment in early childhood and future research must examine these dynamics in a clinical population to further elucidate differences between normative and atypical patterns of sadness and irritability in this developmental period.

Our findings hold important clinical implications for future prevention and intervention. For example, examining the daily occurrence of sadness and irritability provides dimensional, developmentally-sensitive information about variability in common depressive behaviors in early childhood. Knowledge of how a child's behavior compares to both his/her peers and also his/her own average reflects a critical step in developing medical and psychiatric guidelines for the early identification and screening of children at risk for depression. Primary care providers are often the first point of contact for parents concerned about their child's emotions and behaviors and thus a greater understanding of how a child's behavior compares to his or her own average can equip primary care providers with the knowledge to normalize parental concerns or suggest additional mental health referrals. Further, this daily analysis of behaviors aids in overcoming methodological challenges in the assessment of preschool depression, including retrospective reporting on child behavior or the focus on depressive disorders without consideration of symptom presentation. In addition, determining factors that predict mood shifts is relevant for identifying those at higher risk for the development of depression and can provide targets for modification. The present study has the potential to critically inform the future development of novel interventions targeting problematic depressive behaviors and risk factors at the daily level in early childhood.

Table 1

Demographic characteristics of study sample

Demographic variable	
Child sex, male [*n* (%)]	137 (47.1%)
Child age, mean (SD [range]), years	4.20 (.80 [3.00-6.42])
Child race [*n* (%)]	
White, European-American	176 (60.5%)
African-American	26 (8.9%)
Asian	17 (5.8%)
Mixed/Other	71 (24.4%)
Child ethnicity [*n* (%)]	
Hispanic/Latino descent	48 (16.7%)
Parent completing diaries	
Mother [*n* (%)]	273 (93.8%)
Father [*n* (%)]	18 (6.2%)
Parents' marital status [*n* (%)][a]	
Married	247 (84.9%)
Living together	19 (6.5%)
Divorced or separated	12 (4.1%)
Never married	21 (7.2%)
Family income [n (%)]	
< $20,000	18 (6.3%)
$20,001 to $40,000	43 (15.1%)

$40,001 to $70,000	56 (19.7%)
$70,001 to $100,000	70 (24.6%)
> $100,000	97 (34.2%)
Parental education: graduated 4-year college [*n* (%)]	
Mothers	196 (67.4%)
Fathers	171 (58.7%)
Total number of diaries completed by family [n (%)]	
0 diaries	8 (2.7%)
1-5 diaries	7 (2.3%)
6-10 diaries	9 (3.0%)
11-14 diaries	275 (92.0%)

Note. $N = 291$. [a]Parents were permitted to endorse more than one marital status if applicable. Of the sample, 1 family (0.3%) did not report the child's race; 3 families (1.0%) did not report the child's Hispanic ethnicity; 7 parents (2.4%) did not report parental education; and 7 (2.4%) families did not report their yearly income.

Table 2

Frequencies of depressive behaviors across all 14 days

Behavioral Frequencies																																		
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
1. Sadness	2151	843	554	151	87	22	11	6	5	1	2	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	3837
2. Moody	1982	697	669	220	158	50	17	15	12	3	12	1	2	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3841
3. Tantrum	2840	600	274	62	48	2	2	0	5	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3835
4. Low interest	3683	118	39	6	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3852
5. Death	3300	90	11	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3403
6. Felt badly	3156	207	42	5	10	3	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3425
7. Tired	3683	119	34	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3844
10. Activity	3572	171	68	10	8	5	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3837
11. Concentrate	3283	71	52	4	4	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3417
12. Tearful	2040	719	513	116	82	29	17	0	7	2	4	0	0	0	0	0	0	2	0	0	1	0	0	3	0	0	0	0	0	0	2	3537

Behavioral Presence			
	Absent	**Present**	**Total**
8. Appetite/ Weight	3598	200	3798
9. Sleep	3298	527	3825

Note. *N* = 291 participants. Values reflect total frequencies for all behaviors endorsed over the course of the 14-day diary. Changes in appetite or weight and changes in sleep habits were assessed as present or absent over the course of the 14-day diary.

Table 3

Correlations among all major study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Sadness[a]	--																						
2. Irritability[a]	.34***	--																					
3. Low interest[b]	.10***	.06***	--																				
4. Thoughts of death[b]	.02	.03	.01	--																			
5. Low self-esteem[b]	.19***	.20***	.04*	.01	--																		
6. Fatigue[b]	.09***	.05**	.23***	.04*	.03*	--																	
7. Changes in appetite/ weight[b]	.06**	.03	.13***	-.01	.03	.10***	--																
8. Changes in sleep habits[b]	.12***	.10***	.10***	.03	.05**	.11***	.18***	--															
9. Changes in activity level[b]	.06***	.06***	.21***	.02	.08***	.25***	.17***	.23***	--														
10. Changes in concentration[b]	.04**	.07***	.05**	.02	.11***	.10***	.06***	.08***	.10***	--													
11. Parent-child relationship functioning[a]	-.29***	-.36***	-.08***	-.04*	-.15***	-.06***	-.05**	-.12***	-.09***	-.11***	--												
12. Sleep quality[a]	-.07***	-.05**	-.05**	-.02	-.01	-.08***	-.09***	-.28***	-.10***	-.09***	.16***	--											
13. IRS Impairment	.07***	.21***	.05**	-.01	.08***	.03	-.04*	.03	.04**	.04**	-.17***	-.06***	--										
14. ECI ADHD symptoms	.11***	.13***	.03	.01	.02	.02	.03	.05**	.04**	.03	-.14***	-.09***	.26***	--									
15. ECI ODD symptoms	.09***	.32***	.03*	.04*	.08***	.04*	.04*	.04**	.04**	-.01	-.23***	-.09***	.45***	.47***	--								
16. ECI anxiety symptoms	.07***	.09***	.09***	.04*	.05**	.08***	.05**	.08***	.11***	.05**	-.06***	-.14***	.32***	.27***	.36***	--							
17. ECI depression symptoms	.11***	.15***	.04*	.06***	.04**	.06***	-.01	.05**	.03	.03*	-.05**	-.06***	.09***	.003	.12***	.18***	--						
18. Child sex	.06***	.04*	.02	-.01	.01	.02	.01	-.03	-.02	.01	-.03	.01	.002	-.19***	-.05**	-.04*	.09***	--					
19. Child age	-.10***	-.06**	-.004	.02	.05**	.01	-.05**	-.09***	-.04**	-.04*	-.05**	.12***	.16***	-.10***	.05**	-.01	.01	-.02	--				
20. Child race/ethnicity	.07***	-.001	-.02	.01	.04**	.001	-.05**	-.04*	-.02	-.02	.01	.07***	.04**	.04*	.06***	-.10***	.03	-.04*	-.03	--			
21. Parent education	.06***	.01	.01	.04*	.06***	.03	-.03*	.02	.02	.03	-.06***	-.01	-.03	.04*	.11***	.02	.10***	-.03	.12***	.24***	--		
22. Parent marital status	-.001	.07***	.001	.02	-.002	.04*	-.03*	-.001	.01	-.01	-.03	-.01	-.09***	.09***	.13***	-.04*	.06***	-.13***	-.08***	.27***	.36***	--	
23. Total time spent outside the home[a]	-.11***	-.12***	-.02	-.02	-.03	-.03	-.03	-.05**	-.06**	-.02	.05**	.05**	-.02	-.10***	-.10***	-.04**	-.06***	.02	.10***	-.07***	.06**	-.18***	--
Mean	1.69	1.49	--	--	--	--	--	--	--	--	4.36	4.01	1.36	35.16	14.19	20.81	15.79	--	4.20	--	--	--	3.01
SD	2.55	2.09	--	--	--	--	--	--	--	--	.78	.79	.62	7.83	3.84	3.86	1.73	--	.80	--	--	--	4.00

Note: N = 291 participants. Sadness reflects combined sadness and tearfulness variables. Irritability reflects combined irritability and tantrum variables. [a] Reflects mean value across all 14 diary days; [b] Reflects whether the behavior occurred at least once over the 14-day diary. IRS = Impairment Rating Scale; ECI = Early Childhood Inventory; ADHD = attention-deficit/hyperactivity disorder; ODD = oppositional defiant disorder. Child sex: 0 = male, 1 = female. Child race/ethnicity: 0 = non-White or Hispanic, 1 = non-Hispanic White. Parent education: 0 = both parents have less than a 4-year college degree, 1 = at least one parent with a 4-year college degree. Parent marital status: 0 = not married or living together, 1 = married or living together. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table 4

Same day associations between sadness and irritability

	Same day sadness		**Same day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	.09 (.06)	1.09	-.03 (.07)	.97
Sadness (between-person)	--	--	.37 (.06)	1.44***
Sadness (within-person)	--	--	.30 (.02)	1.36***
Irritability (between-person)	.34 (.06)	1.40***	--	--
Irritability (within-person)	.31 (.02)	1.36***	--	--
Child age	-.17 (.06)	.85**	-.07 (.06)	.93
Time spent away from parent	-.05 (.02)	.96	-.08 (.02)	.93**
Parent education	-.46 (.13)	.63***	--	--
Parent marital status	--	--	-.62 (.19)	.54**
	***b* (SE)**	***p***	***b* (SE)**	***p***
Level 2, τ_{00}	.75 (.08)	<.001***	1.00 (.11)	<.001***
Level 1, σ_{00}	.61 (.02)	<.001***	.57 (.01)	<.001***
Level 1, ρ	.07 (.02)	.001**	.05 (.02)	.02*

Note. *b* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 5

Same day associations with sleep quality

	Same day sadness		**Same day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	.09 (.06)	1.09	-.04 (.07)	.96
Same night sleep quality (between-person)	-.09 (.06)	.91	-.07 (.07)	.94
Same night sleep quality (within-person)	-.01 (.02)	.99	-.02 (.02)	.98
Same day sadness (between-person)	--	--	.31 (.07)	1.36***
Same day sadness (within-person)	--	--	.30 (.02)	1.35***
Same day irritability (between-person)	.32 (.06)	1.37***	--	--
Same day irritability (within-person)	.32 (.02)	1.38***	--	--
Child age	-.16 (.06)	.85**	-.05 (.07)	.95
Time spent away from parent	-.04 (.03)	.96	-.08 (.03)	.93**
Parent education	-.45 (.13)	.64**	--	--
Parent marital status	--	--	-.66 (.19)	.52**
	***b* (SE)**	***p***	***b* (SE)**	***p***
Level 2, τ_{00}	.74 (.08)	<.001***	1.05 (.11)	<.001***
Level 1, σ_{00}	.61 (.02)	<.001***	.55 (.01)	<.001***
Level 1, ρ	.07 (.02)	.001**	.04 (.02)	.04*

Note. *b* = unstandardized beta. Child race/ethnicity: 0 = non-Hispanic White, 1 = Hispanic or non-White. *p < .05; **p < .01; ***p < .001.

Table 6

Same day associations with parent-child relationship functioning

	Same day sadness		**Same day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	.06 (.06)	1.06	-.07 (.06)	.93
Parent-child relationship functioning (between-person)	-.13 (.06)	.88*	-.29 (.06)	.75***
Parent-child relationship functioning (within-person)	-.23 (.02)	.79***	-.28 (.02)	.75***
Same day sadness (between-person)	--	--	.26 (.06)	1.30***
Same day sadness (within-person)	--	--	.20 (.02)	1.22***
Same day irritability (between-person)	.29 (.06)	1.34***	--	--
Same day irritability (within-person)	.22 (.02)	1.25***	--	--
Child age	-.19 (.06)	.83**	-.12 (.06)	.89
Time spent away from parent	-.04 (.02)	.96	-.07 (.02)	.93**
Parent education	-.44 (.13)	.64**	--	--
Parent marital status	--	--	-.57 (.18)	.57**
	***b* (SE)**	***P***	***b* (SE)**	***p***
Level 2, τ_{00}	.74 (.08)	<.001***	.92 (.10)	<.001***
Level 1, σ_{00}	.62 (.02)	<.001***	.59 (.02)	<.001***
Level 1, ρ	.08 (.02)	<.001***	.04 (.02)	.03*

Note. *b* = unstandardized beta. Child race/ethnicity: 0 = non-Hispanic White, 1 = Hispanic or non-White. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 7

Prospective next day associations between sadness and irritability

	Next day sadness		**Next day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	.15 (.04)	1.16***	.08 (.03)	1.08*
Prior day sadness (between-person)	.69 (.03)	1.99***	.03 (.03)	1.03
Prior day sadness (within-person)	-.09 (.02)	.92***	.03 (.02)	1.03
Prior day irritability (between-person)	.10 (.03)	1.11**	.74 (.03)	2.10***
Prior day irritability (within-person)	.03 (.02)	1.03	-.09 (.02)	.91***
Child age	-.07 (.04)	.94	-.04 (.03)	.96
Time spent away from parent	.01 (.02)	1.01	-.02 (.02)	.99
Parent education	-.30 (.08)	.74***	--	--
Parent marital status	--	--	-.40 (.10)	.67***
	***b* (SE)**	***P***	***b* (SE)**	***p***
Level 2, τ_{00}	.18 (.03)	<.001***	.12 (.03)	<.001***
Level 1, σ_{00}	.84 (.02)	<.001***	.92 (.03)	<.001***
Level 1, ρ	.13 (.03)	<.001***	.15 (.03)	<.001***

Note. *b* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 8

Moderating effect of child age on the prospective associations of children's sadness and irritability across days

	Next day sadness		**Next day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	-.10 (.08)	.91	-.35 (.14)	.71*
Prior day sadness (between-person)	.83 (.08)	2.29***	.03 (.03)	1.03
Prior day sadness (within-person)	-.08 (.02)	.92***	.03 (.02)	1.03
Prior day irritability (between-person)	.06 (.04)	1.06	.75 (.06)	2.11***
Prior day irritability (within-person)	.03 (.02)	1.03	-.09 (.02)	.91***
Child age	-.06 (.03)	.94	-.02 (.03)	.99
Prior day sadness (between-person) * Child age	.30 (.08)	1.35***	--	--
Prior day sadness (within-person) * Child age	-.01 (.02)	1.00	--	--
Prior day irritability (between-person) * Child age	--	--	-.08 (.06)	.92
Prior day irritability (within-person) * Child age	--	--	.01 (.02)	1.01
Parent education	.29 (.08)	1.33**	--	--
Time spent away from parent	.01 (.02)	1.01	-.01 (.02)	.99
Parent marital status	--	--	.43 (.14)	1.54**
	***b* (SE)**	***p***	***b* (SE)**	***p***
Level 2, τ_{00}	.13 (.03)	<.001***	.10 (.02)	<.001***
Level 1, σ_{00}	.89 (.02)	<.001***	.95 (.03)	<.001***
Level 1, ρ	.12 (.03)	<.001***	.16 (.03)	<.001***

Note. Child age = age in months. *b* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together.

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 9

Moderating effect of child sex on the prospective associations of children's sadness and irritability across days

	Next day sadness		**Next day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	-.12 (.08)	.89	-.27 (.11)	.77*
Prior day sadness (between-person)	1.02 (.09)	2.78***	.04 (.03)	1.04
Prior day sadness (within-person)	-.15 (.04)	.86***	.03 (.02)	1.03
Prior day irritability (between-person)	.10 (.05)	1.11*	.96 (.08)	2.60***
Prior day irritability (within-person)	.03 (.02)	1.03	-.11 (.04)	.90**
Child sex	.03 (.06)	1.03	-.02 (.05)	.98
Prior day sadness (between-person) * Child sex	-.48 (.15)	.62**	--	--
Prior day sadness (within-person) * Child sex	.09 (.04)	1.10*	--	--
Prior day irritability (between-person) * Child sex	--	--	-.32 (.11)	.73**
Prior day irritability (within-person) * Child sex	--	--	.03 (.04)	1.03
Child age	-.04 (.03)	.96	-.03 (.03)	.97
Parent education	.27 (.08)	1.31**	--	--
Time spent away from parent	.02 (.02)	1.02	-.01 (.02)	.99
Parent marital status	--	--	.36 (.11)	.97**
	***b* (SE)**	***p***	***b* (SE)**	***p***
Level 2, τ_{00}	.14 (.03)	<.001***	.09 (.02)	<.001***
Level 1, σ_{00}	.87 (.02)	<.001***	.95 (.03)	<.001***
Level 1, ρ	.14 (.03)	<.001***	.15 (.03)	<.001***

Note. *b* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 10

Moderating effect of ECI depression symptoms on the prospective associations of children's sadness and irritability across days

	Next day sadness		**Next day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	-.09 (.07)	.92	-.22 (.11)	.80
Prior day sadness (between-person)	.76 (.12)	2.13***	.04 (.02)	1.04
Prior day sadness (within-person)	-.12 (.02)	.89***	.03 (.02)	1.03*
Prior day irritability (between-person)	.09 (.05)	1.10	.83 (.05)	2.29***
Prior day irritability (within-person)	.03 (.02)	1.04	-.09 (.02)	.92***
ECI depression symptoms	.08 (.03)	1.09	.05 (.03)	1.05
Prior day sadness (between-person) * ECI depression symptoms	-.21 (.05)	.81***	--	--
Prior day sadness (within-person) * ECI depression symptoms	.07 (.02)	1.07**	--	--
Prior day irritability (between-person) * ECI depression symptoms	--	--	-.22 (.04)	.80***
Prior day irritability (within-person) * ECI depression symptoms	--	--	.003 (.03)	1.00
Child age	-.06 (.03)	.94*	-.01 (.03)	1.00
Parent education	.26 (.08)	1.30**	--	--
Time spent away from parent	.01 (.02)	1.01	-.01 (.02)	.99
Parent marital status	--	--	.34 (.12)	1.40**
	***b* (SE)**	***p***	***b* (SE)**	***p***
Level 2, τ_{00}	.14 (.03)	<.001***	.07 (.02)	.001**
Level 1, σ_{00}	.87 (.02)	<.001***	.99 (.03)	<.001***
Level 1, ρ	.14 (.03)	<.001***	.14 (.03)	<.001***

Note. ECI = Early Childhood Inventory. *b* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 11

Moderating effect of ECI ODD symptoms on the prospective associations of children's sadness and irritability across days

	Next day sadness		**Next day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	-.15 (.08)	.86	-.19 (.14)	.82
Prior day sadness (between-person)	.70 (.13)	2.02***	.002 (.03)	1.00
Prior day sadness (within-person)	-.10 (.02)	.90***	.03 (.02)	1.03
Prior day irritability (between-person)	.05 (.04)	1.05	.81 (.04)	2.25***
Prior day irritability (within-person)	.02 (.02)	1.03	-.15 (.03)	.86***
ECI ODD symptoms	.05 (.03)	1.05	.14 (.03)	1.15***
Prior day sadness (between-person) * ECI ODD symptoms	.07 (.10)	1.08	--	--
Prior day sadness (within-person) * ECI ODD symptoms	.05 (.02)	1.05*	--	--
Prior day irritability (between-person) * ECI ODD symptoms	--	--	-.17 (.02)	.84***
Prior day irritability (within-person) * ECI ODD symptoms	--	--	.05 (.02)	1.05**
Child age	-.07 (.03)	.93*	-.01 (.02)	.99
Parent education	.29 (.09)	1.33**	--	--
Time spent away from parent	.01 (.03)	1.02	-.01 (.02)	1.00
Parent marital status	--	--	.37 (.14)	1.44*
	***b* (SE)**	***p***	***b* (SE)**	***p***
Level 2, τ_{00}	.177 (.03)	<.001***	.01 (.02)	.53
Level 1, σ_{00}	.84 (.02)	<.001***	1.06 (.03)	<.001***
Level 1, ρ	.13 (.03)	<.001***	.20 (.03)	<.001***

Note. ECI = Early Childhood Inventory. ODD = oppositional defiant disorder. *b* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 12

Moderating effect of IRS impairment on the prospective associations of children's sadness and irritability across days

	Next day sadness		**Next day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	-.15 (.08)	.86	-.18 (.10)	.83
Prior day sadness (between-person)	.69 (.14)	2.00***	.03 (.03)	1.03
Prior day sadness (within-person)	-.12 (.02)	.89***	.03 (.02)	1.03
Prior day irritability (between-person)	.08 (.04)	1.09*	.80 (.08)	2.21***
Prior day irritability (within-person)	.02 (.02)	.102	-.11 (.03)	.90***
Average IRS score	.004 (.04)	1.00	.12 (.04)	1.13**
Prior day sadness (between-person) * Average IRS score	.02 (.09)	1.02	--	--
Prior day sadness (within-person) * Average IRS score	.04 (.01)	1.04***	--	--
Prior day irritability (between-person) * Average IRS score	--	--	-.14 (.02)	.87***
Prior day irritability (within-person) * Average IRS score	--	--	.02 (.01)	1.02
Child age	-.06 (.03)	.94*	-.05 (.04)	.95
Parent education	.30 (.09)	1.36**	--	--
Time spent away from parent	.01 (.03)	1.01	-.01 (.02)	.99
Parent marital status	--	--	.29 (.10)	1.33**
	***b* (SE)**	***P***	***b* (SE)**	***P***
Level 2, τ_{00}	.17 (.03)	<.001***	.08 (.02)	<.001***
Level 1, σ_{00}	.84 (.02)	<.001***	.95 (.03)	<.001***
Level 1, ρ	.15 (.03)	<.001***	.16 (.03)	<.001***

Note. IRS = Impairment Rating Scale. Child age = age in months. *b* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 13

Moderating effect of child sleep quality on the prospective associations of children's sadness and irritability across days

	Next day sadness		**Next day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	-.14 (.08)	.87	-.33 (.13)	.72**
Prior day sadness (between-person)	.75 (.11)	2.11***	.03 (.03)	1.03
Prior day sadness (within-person)	-.08 (.02)	.92***	.03 (.02)	1.03
Prior day irritability (between-person)	.06 (.04)	1.06	.75 (.09)	2.11***
Prior day irritability (within-person)	.03 (.02)	1.03	-.09 (.02)	.92***
Prior night sleep quality (between-person)	-.03 (.04)	.92***	-.03 (.03)	.97
Prior night sleep quality (within-person)	-.08 (.02)	.97	-.06 (.02)	.94**
Prior day sadness (between-person) * Prior night sleep quality (between-person)	.21 (.10)	1.23*	--	--
Prior day sadness (between-person) * Prior night sleep quality (within-person)	.03 (.01)	1.03	--	--
Prior day sadness (within-person) * Prior night sleep quality (between-person)	.01 (.03)	1.01	--	--
Prior day sadness (within-person) * Prior night sleep quality (within-person)	.01 (.02)	1.01	--	--
Prior day irritability (between-person) * Prior night sleep quality (between-person)	--	--	-.02 (.03)	.99
Prior day irritability (between-person) * Prior night sleep quality (within-person)	--	--	.02 (.01)	1.02*
Prior day irritability (within-person) * Prior night sleep quality (between-person)	--	--	-.01 (.03)	.99
Prior day irritability (within-person) * Prior night sleep quality (within-person)	--	--	-.01 (.01)	1.00
Child age	-.07 (.03)	.93*	-.03 (.04)	.97
Parent education	.30 (.09)	1.35**	--	--

Time spent away from parent	.02 (.02)	1.02	-.01 (.02)	.99
Parent marital status	--	--	.40 (.13)	1.49**
	***b* (SE)**	***p***	***b* (SE)**	***p***
Level 2, τ_{00}	.18 (.03)	<.001***	.13 (.03)	<.001***
Level 1, σ_{00}	.85 (.02)	<.001***	.92 (.03)	<.001***
Level 1, ρ	.11 (.03)	<.001***	.14 (.03)	<.001***

Note. *B* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together. *$p < .05$; **$p < .01$; ***$p < .001$.

Table 14

Moderating effect of parent-child relationship functioning on the prospective associations of children's sadness and irritability across days

	Next day sadness		**Next day irritability**	
	***b* (SE)**	**Exp(*b*)**	***b* (SE)**	**Exp(*b*)**
Intercept	.25 (.13)	1.29	-.12 (.11)	.89
Prior day sadness (between-person)	.96 (.05)	2.61***	-.01 (.03)	1.00
Prior day sadness (within-person)	-.11 (.03)	.90***	.03 (.02)	1.02
Prior day irritability (between-person)	.001 (.04)	1.00	.82 (.05)	2.27***
Prior day irritability (within-person)	.03 (.02)	1.03	-.14 (.03)	.87***
Prior day parent-child relationship functioning (between-person)	-.05 (.04)	.95	-.10 (.04)	.91**
Prior day parent-child relationship functioning (within-person)	.02 (.03)	1.02	.03 (.02)	1.03
Prior day sadness (between-person) * Prior day parent-child relationship functioning (between-person)	.23 (.02)	1.26***	--	--
Prior day sadness (between-person) * Prior day parent-child relationship functioning (within-person)	-.003 (.01)	1.00	--	--
Prior day sadness (within-person) * Prior day parent-child relationship functioning (between-person)	-.03 (.01)	.97**	--	--
Prior day sadness (within-person) * Prior day parent-child relationship functioning (within-person)	.01 (.01)	1.01	--	--
Prior day irritability (between-person) * Prior day parent-child relationship functioning (between-person)	--	--	.19 (.04)	1.21***
Prior day irritability (between-person) * Prior day parent-child relationship functioning (within-person)	--	--	-.03 (.01)	.98*
Prior day irritability (within-person) * Prior day parent-child relationship functioning (between-person)	--	--	-.04 (.02)	.96*
Prior day irritability (within-person) * Prior day parent-child relationship functioning (within-person)	--	--	-.02 (.01)	.98
Child age	-.07 (.03)	.93*	-.02 (.03)	.98
Parent education	.27 (.07)	1.31***	--	--
Time spent away from parent	.02 (.02)	1.02	-.01 (.02)	.99
Parent marital status	--	--	.25 (.11)	1.28*

	***b* (SE)**	***p***	***b* (SE)**	***p***
Level 2, τ_{00}	.04 (.02)	.02*	.05 (.02)	.01**
Level 1, σ_{00}	.98 (.03)	<.001***	1.00 (.03)	<.001***
Level 1, ρ	.14 (.03)	<.001***	.18 (.03)	<.001***

Note. *b* = unstandardized beta; Exp(*b*) = exponentiated beta. Exponentiated beta estimates are only provided for significant predictors. Parent education: 0 = neither parent with at least a 4-year college degree. 1 = at least one parent with a 4-year college degree; Parent marital status: 0 = not married or living together, 1 = married and/or living together. *$p < .05$; **$p < .01$; ***$p < .001$.

Appendix A. Recruitment phone form.

Recruitment Form

1. Child Name:_____
2. Child Date of Birth:_____
3. Parent Name:_____
4. Co-Parent Name:_____
5. Telephone Number*:_____
6. Child age 3 – 5?: YES NO DK
7. Parent is primary caregiver? (at least 50% custody): YES NO DK
8. Parent fluent in English (read and speak)?: YES NO DK
9. Child Developmental or Cognitive Disorders?: YES NO DK
10. Home (daily) Internet access?: YES NO DK
11. Child serious medical problems?: YES NO DK
12. New daycare/camp school program?: YES NO DK

    If yes, date it began: _____

13. Recruitment Method
    i. Flyer
    ii. Friend
    iii. Other_____
14. Location of Flyer
    i. School
    ii. Daycare
    iii. Medical Doctor Office
    iv. Mental Health Office/Clinic
    v. Community Center
    vi. Other_____

15. Inclusion Criteria Met: YES NO DK

Appendix B. Baseline questionnaire.

Part 1.
Demographic Data

Child's Age: _____years

Child's date of birth: _____MM/_____DD/_____YYYY

Child's Gender: ☐ Male ☐ Female

Your relationship to child: ☐ Mother ☐ Father ☐ Other; Specify_____

Child's Race/Ethnicity: ☐ African American/Black ☐ Asian ☐ White
☐ Mixed Race/Ethnicity; Specify_____
☐ Other; Specify_____

Is child of Hispanic descent? ☐ Yes ☐ No

With which adults does the child currently live? (Check all that apply)

☐ Biological mother
☐ Biological father
☐ Adoptive mother
☐ Adoptive father
☐ Step-mother or father's companion
☐ Step-father or mother's companion
☐ Other relative(s)
☐ Other non-relative(s)

Marital Status of child's biological parents:

☐ Married
☐ Living together
☐ Mother deceased
☐ Father deceased
☐ Father remarried
☐ Separated
☐ Divorced
☐ Never married
☐ Mother remarried

Please list the child's siblings in order of birth. (Please indicate first names)

First Name	Sex	Age	Living at Home
	☐ Male ☐ Female		☐ Yes ☐ No
	☐ Male ☐ Female		☐ Yes ☐ No
	☐ Male ☐ Female		☐ Yes ☐ No
	☐ Male ☐ Female		☐ Yes ☐ No

	⁰⁰ Male ⁰⁰ Female		⁰⁰ Yes ⁰⁰ No
	⁰⁰ Male ⁰⁰ Female		⁰⁰ Yes ⁰⁰ No

PARENT INFORMATION: (Please complete for biological parents if known)

Mother: Age: _____ Mother's date of birth: _____MM/_____DD/_____YYYY

Mother's present occupation: _____

Father: Age: _____ Father's date of birth: _____MM/_____DD/_____YYYY

Father's present occupation: _____

Education of Mother:	Education of Father:
00 8th Grade or Less	00 8th Grade or Less
00 Some High School	00 Some High School
00 High School Graduate (or GED)	00 High School Graduate (or GED)
00 Some College (or 2 Year Degree)	00 Some College (or 2 Year Degree)
00 4 Year College Degree	00 4 Year College Degree
00 Master's Degree	00 Master's Degree
00 Doctoral Degree	00 Doctoral Degree

Yearly Family Income:
00 <$20,000 00 $20,001 - $40,000 00 $40,001 - $70,000 00 $70,001 - $100,000 00 > $100,000

COMPLETE THIS SECTION IF ADULT(S) CARING FOR CHILD IS/ARE NOT BIOLOGICAL PARENTS:

A. Relationship to child: 00 Adoptive parent 00 Other relative Age: _____
00 Step parent 00 Other non-relative

B. Relationship to child: 00 Adoptive parent 00 Other Relative Age: _____
00 Step parent 00 Other non-relative

Highest level of education for non-biological caretaker: (See above)

Caretaker A (above):	Caretaker B (above):
00 8th Grade or Less	00 8th Grade or Less
00 Some High School	00 Some High School
00 High School Graduate (or GED)	00 High School Graduate (or GED)
00 Some College (or 2 Year Degree)	00 Some College (or 2 Year Degree)
00 4 Year College Degree	00 4 Year College Degree
00 Master's Degree	00 Master's Degree
00 Doctoral Degree	00 Doctoral Degree

Yearly family income of non-biological caretaker:

00 <$20,000 00 $20,001 - $40,000 00 $40,001 - $70,000 00 $70,001 - $100,000 00 > $100,000

CHILD'S and FAMILY'S MEDICAL HISTORY:

Does child have any illnesses or disabilities (either physical or mental)? ☐ Yes ☐ No

If yes, please describe: _____

Please mark whether your child has ever had any of the following medical conditions:

☐ Epilepsy/seizures/convulsions

☐ Seizures with high temperatures

☐ Birth abnormalities

☐ Heart disease

☐ Asthma

☐ Food sensitivities

☐ Allergies (describe)

_____

☐ Chicken pox

☐ German measles

☐ Whooping cough

☐ Problems with vision

☐ Problems with hearing

☐ Obesity

☐ Serious accident (describe)

_____

☐ Fever over 104, unknown cause

☐ Developmental delay (describe)

_____

☐ Autism Spectrum Disorder (describe)

_____

☐ Head injuries or lacerations leading to loss of consciousness

☐ Unconscious (other)

☐ Anemia

☐ Lead poisoning

☐ Meningitis

☐ Encephalitis

☐ Mumps

☐ Emergency room visit

☐ Poisoning, medicines

☐ Poisoning, cleaning agent

☐ Poisoning, non-food item

☐ Physical handicaps (describe)

_____

☐ Other diseases (describe)

_____

☐ Emotional or behavioral problems (describe)

_____

☐ Pervasive Developmental Disorder (describe)

_____

Is child taking medications for any conditions above? ☐ Yes ☐ No

Medication (specify) _____

Has your child ever been hospitalized for a medical problem? ☐ Yes ☐ No

If yes, please specify:

a) Number of times _____

b) Reason(s)? _____

CHILDHOOD HISTORY:

How many pregnancies did mother have before the pregnancy with this child?
(Including those not carried to term)

_____# pregnancies

Check any of the following that occurred during the pregnancy with this child:
(Check all that apply)

00 Severe nausea and vomiting
00 Toxemia
00 High blood pressure
00 Rubella, Mumps
00 Incompatible Rh factor
00 Diabetes
00 Anemia
00 Bleeding 1st 3 months
00 Bleeding 2nd 3 months
00 Bleeding 3rd 3 months

Medications during pregnancy: 00 No 00 Yes

Please specify medications (include antidepressants, name of drug, dosage, and duration of use)

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

Check any of the following if they occurred at or following the delivery of the child:
(Check all that apply)

00 Premature delivery
Specify weeks of gestation at birth: _____
00 Infant required oxygen
00 Cesarean section
00 Infant required blood transfusion
00 Breech delivery (feet or buttocks first)
00 Infant was placed in an incubator
00 Infant had cord around neck
00 Infant was blue at birth
00 Other problems (specify)
_____

Child's weight at birth: _____pounds _____ounces

Did your child stay in the hospital after mother left? 00 Yes 00 No

If yes, please specify number of days _____

During the first year of life, did your child have difficulties in any of the following areas? (Check all that apply)

00 Sleep problems
00 Feeding problems
00 Resisted being held
00 Overly active
00 Under active
00 Excessive crying
00 Difficult to comfort
00 Sluggish, nonresponsive
00 Fussy much of the time

Was child breast-fed? 00 Yes 00 No If yes, for how long? _____months

Age child started walking without assistance: _____months

Age child spoke first words: _____months

Age child dressed without supervision: _____months

Did your child have difficulties with the development of speech? (Check all that apply)

00 No difficulties
00 Delayed speech
00 Stammering
00 Hard to understand
00 Did not use "I" or "me"
00 Often repeated other's words
00 Talked excessively about one topic
00 Other

If yes, when was your child's speech or language problems or delay first diagnosed? _____months

Did your child ever receive treatment or speech therapy for this problem? 00 Yes 00 No

Does your child currently have a speech or language problem or delay? 00 Yes 00 No

Is your child currently receiving services for a speech or language problem or delay? 00 Yes 00 No

Have you ever sought psychological or psychiatric services for your child? 00 Yes 00 No

If yes:

Whom did you see? (check all that apply)

00 Psychotherapist (e.g., Psychologist, Social Worker) 00 Psychiatrist 00 Pediatrician 00 Other_____

For what problem(s) did you seek services? (check all that apply)

00 Anxiety 00 Depression 00 Inattention and/or hyperactivity 00 Oppositionality 00 Other_____

Child's primary caregiver(s) are:
(check all that apply)

00 Mother 00 Father 00 Grandparent 00 Live-in nanny/sitter 00 Other_____

How many <u>hours per week</u> does your child spend in the following:

_____School _____Daycare _____Other childcare setting

Does mother work outside of the home? ☐ Yes ☐ No
If yes, how many hours per week? _____

Does father work outside of the home? ☐ Yes ☐ No
If yes, how many hours per week? _____

About how many close friends does your child have? (Do not include brothers and sisters)

☐ None ☐ 1 ☐ 2 or 3 ☐ 4 or more

About how many times a week does your child do things with any friends outside of regular school hours? (Do not include brothers and sisters)

☐ Less than 1 ☐ 1 or 2 ☐ 3 or more

Compared to others of his/her age, how well does your child:

	Worse	Average	Better	
a) Get along with his/her brothers and sisters?	☐	☐	☐	☐ Has no siblings
b) Get along with other kids?	☐	☐	☐	
c) Behave with his/her parents?	☐	☐	☐	
d) Play and work alone?	☐	☐	☐	

Does your child receive special education or remedial services or attend a special class or special school?

☐ No ☐ Yes

If yes, please describe the kind of services, class or school _____

_____

Has your child had any academic or other problems in school or daycare?

☐ No ☐ Yes

If yes, please describe._____

_____

Please describe the best things about the child:

_____

_____

Part 2.
Early Childhood Inventory
Parent Checklist

A.	Was this child ever evaluated for special education services?	No	Yes
B.	Did this child ever get special education services?	No	Yes
C.	Is this child currently receiving special education services?	No	Yes
D.	Did this child ever get professional help for emotional or behavioral problems?	No	Yes
E.	Did this child ever take medication for emotional or behavioral problems?	No	Yes
F.	Is this child currently taking medication for emotional or behavioral problems?	No	Yes
G.	Is this child currently enrolled in a day care, Head Start or other preschool program?	No	Yes

	Compared with other children the same age, how often does this child:	Never	Some-times	Often	Very often
1.	Use words to communicate his or her needs	0	1	2	3
2.	Understand what other people say to him/her	0	1	2	3
3.	Have conversations with you about events or activities	0	1	2	3
4.	Pronounce words in a way that other people can understand	0	1	2	3
5.	Seem clumsy or poorly coordinated	0	1	2	3
6.	Have difficulty with hand coordination such as using scissors, crayons, or blocks, or manipulating small objects	0	1	2	3
7.	Have difficulty taking care of self (washing, eating, dressing, toileting)	0	1	2	3
8.	Enjoy make believe play with other children	0	1	2	3
9.	Enjoy make believe play by himself/herself	0	1	2	3
10.	Play with other children the same age	0	1	2	3
11.	Seek comfort when hurt	0	1	2	3
12.	Want to please adults	0	1	2	3

Overall Behavioral Functioning

DIRECTIONS: Circle which rating best describes this child's overall behavior. Answer each question to the best of your ability.

Category A: **Compared with other children the same age**	**Never**	**Some-times**	**Often**	**Very often**
A1. Rushes through tasks or activities paying little attention to detail	0	1	2	3
A2. Has difficulty paying attention to tasks or play activities (looking at picture books, etc.)	0	1	2	3
A3. Does not seem to listen when spoken to directly	0	1	2	3
A4. Shifts from one uncompleted activity to another	0	1	2	3
A5. Has difficllty organizing tasks and activities	0	1	2	3
A6. Avoids doing tasks that require mental effort (puzzles, projects, etc.)	0	1	2	3
A7. Loses things necessary for activities	0	1	2	3
A8. Is easily distracted by other things going on	0	1	2	3
A9. Is forgetful in daily activities	0	1	2	3
A10. Fidgets with hands or feet or squirms in seat	0	1	2	3
A11. Has difficulty remaining seated when asked to do so	0	1	2	3
A12. Runs about or climbs on things when asked not to do so	0	1	2	3
A13. Has difficulty playing quietly	0	1	2	3
A14. Is "on the go" or acts as if "driven by a motor"	0	1	2	3
A15. Talks excessively	0	1	2	3
A16. Blurts out answers to questions before they have been completed	0	1	2	3
A17. Has difficulty awaiting turn in group activities	0	1	2	3
A18. Interrupts people or disrupts other children's activities	0	1	2	3
A19. When asked to change an activity, has difficulty attending to new task	0	1	2	3
A20. Daydreams, acts spaced out	0	1	2	3
Ax. **How often do the behaviors in Category A interfere with child's ability to follow daily routines or get along with others?**	0	1	2	3

Category B: Compared with other children the same age	Never	Some-times	Often	Very often
B21. Loses temper	0	1	2	3
B22. Argues with adults	0	1	2	3
B23. Defies or refuses to do what you tell him/her to do	0	1	2	3
B24. Does things to deliberately annoy others	0	1	2	3
B25. Blames others for own misbehavior or mistakes	0	1	2	3
B26. Is touchy or easily annoyed by others	0	1	2	3
B27. Is angry and resentful	0	1	2	3
B28. Takes anger out on others or tries to get even	0	1	2	3
Bx. How often do the behaviors in Category B interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category C: Compared with other children the same age	Never	Some-times	Often	Very often
C29. Does serious lying	0	1	2	3
C30. Bullies, threatens, or intimidates others	0	1	2	3
C31. Starts physical fights	0	1	2	3
C32. Steals things	0	1	2	3
C33. Deliberately destroys others' property	0	1	2	3
C34. Deliberately starts fires	0	1	2	3
C35. Uses a weapon when fighting (scissors, rock, stick, etc.)	0	1	2	3
C36. Is physically cruel to animals	0	1	2	3
C37. Is physically cruel to people	0	1	2	3
C38. Is preoccupied with or involved in sexual activity	0	1	2	3
Cx. How often do the behaviors in Category C interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

PCS: **Compared with other children the same age**	Never	Some-times	Often	Very often
P39. Grabs things from other children	0	1	2	3
P40. Throws things at other children	0	1	2	3
P41. Smashes or destroys things	0	1	2	3
P42. Gives dirty looks or makes threatening gestures to other children	0	1	2	3
P43. Curses at or teases other children to provoke conflict	0	1	2	3
P44. Damages other children's property	0	1	2	3
P45. Hits, pushes, or trips other children	0	1	2	3
P46. Threatens to hurt other children	0	1	2	3
P47. Engages in physical fights with other children	0	1	2	3
P48. Annoys other children to provoke them	0	1	2	3
Px. How often do behaviors in this Category interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category D	Never	Some-times	Often	Very often
049. Gets very upset when he/she expects to be separated from home or parents	0	1	2	3
050. Worries that parents will be hurt or leave home and not come back	0	1	2	3
051. Worries that some disaster (getting lost, kidnapped, etc.) will separate him/her from parents	0	1	2	
parent	0	1	2	
053. Worries about being left at home alone or with a sitter	0	1	2	
054. Afraid to go to sleep unless near parent	0	1	2	
055. Has nightmares about being separated from parent	0	1	2	
056. Complains about feeling sick when he/she expects to be separated from home or parents	0	1	2	
Dx. How often do the behaviors in Category D interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category E: Compared with other children the same age	Never	Some-times	Often	Very often
E57. Is overly fearful or tries to avoid specific objects or situations	0	1	2	3
E58. Cannot get distressing thoughts out of his/her mind (worries about germs or doing things perfectly, etc.)	0	1	2	3
E59. Feels compelled to perform unusual habits (line up toys in a particular way, etc.) or do things in a set or rigid way	0	1	2	3
E60. Does unusual movements for no apparent reason (eye blinking, twitching, lip licking, head jerking, etc.)	0	1	2	3
E61. Makes vocal sounds for no apparent reason (coughing, throat clearing, sniffling, grunting, etc.)	0	1	2	3
E62. Worries that other children can do things better than he/she can	0	1	2	3
E63. Worries more than other children	0	1	2	3
E64. Complains about physical problems (aches and pains, upset stomach, etc.) for which there is no apparent cause	0	1	2	3
E65. Refuses to speak other than to family members	0	1	2	3

Category F: Compared with other children the same age	Never	Some-times	Often	Very often
F66. Is sad for most of the day	0	1	2	3
F67. Is irritable for most of the day	0	1	2	3
F68. Shows little interest in fun activities or playing with other children	0	1	2	3
F69. Talks about death or suicide	0	1	2	3
F70. Feels bad about self (says he/she is a bad child, etc.)	0	1	2	3
F71. Has low energy level or is tired for no apparent reason	0	1	2	3
Fx. How often do the above behaviors in Category F interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category F (Continued): Compared with other children the same age		
F72. Has experienced a change in his/her normal appetite or weight *(circle No or Yes)*	No	Yes
F73. Has experienced a change in his/her normal sleeping habits (trouble sleeping or sleeps too much)	No	Yes
F74. Has experienced a change in his/her normal activity level (overactive or inactive)	No	Yes
F75. Has experienced a change in his/her ability to concentrate or make decisions	No	Yes
F76. Has become more sensitive or tearful than usual	No	Yes
F77. Has experienced a very stressful event such as parents divorce, <;teath of a friend or relative, serious illness	No	Yes

Category G: Compared with other children the same age	Never	Some-times	Often	Very often
G78. Is excessively shy with peers	0	1	2	3
G79. Is generally warm and outgoing with family members and familiar adults	0	1	2	3
G80. When put in an uncomfortable social situation, child cries, freezes, or withdraws from interacting	0	1	2	3
Gx. How often do the behaviors in Category G interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category H	Never	Some-times	Often	Very often
H81. Has trouble falling asleep	0	1	2	3
H82. Wakes up crying in the middle of the night	0	1	2	3
H83. Wakes up much earlier than usual	0	1	2	3
H84. Crawls into parents' bed in middle of the night	0	1	2	3
Hx. How often do the behaviors in Category H interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category I	Never	Some-times	Often	Very often
185. Wets bed at night	0	1	2	3
186. Wets bed at night now but was dry at night for at least 4 months	0	1	2	3
187. Wets underwear during daytime hours	0	1	2	3
188. Soils underwear during daytime hours	0	1	2	3
Ix. How often do the behaviors in Category I interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category J: Compared with other children the same age	Never	Some-times	Often	Very often
J89. Has experienced an extremely upsetting event and continues to be bothered by it	0	1	2	3
J90. Has distressing dreams or memories about an extremely upsetting event	0	1	2	3
J91. Repeatedly talks about or acts out in play an extremely upsetting event	0	1	2	3
J92. Seems like he/she is in a trance	0	1	2	3
Jx. How often do the behaviors in Category J interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category K	Never	Some-times	Often	Very often
K93. Refuses to eat enough food to maintain a healthy body weight	0	1	2	3
K94. Has extremely rigid eating habits (won't eat solid food, only eats baby food, etc.)	0	1	2	3
Kx. How often do the behaviors in Category K interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category L: Compared with other children the same age	Never	Some-times	Often	Very often
L95. Seems to be afraid or distrustful, even with familiar people (avoids contact or comforting, watches from sidelines)	0	1	2	3
L96. Seeks affection from most adults and even strangers	0	1	2	3
Lx. How often do the behaviors in Category L interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

Category M: Compared with other children the same age	Never	Some-times	Often	Very often
M97. Has a peculiar way of relating to others (avoids eye contact, odd facial expressions or gestures, etc.)	0	1	2	3
M98. Does not play or relate well with other children	0	1	2	3
M99. Not interested in making friends	0	1	2	3
M100. Is unaware or takes no interest in other people's feelings	0	1	2	3
M101. Has a significant problem with language	0	1	2	3
M102. Has difficulty making socially appropriate conversation	0	1	2	3
M103. Talks in a strange way (repeats what others say; confuses words like "you" and "I"; uses odd words or phrases, etc.)	0	1	2	3
M104. Is unable to "pretend" or "make believe" when playing	0	1	2	3
M105. Shows excessive preoccupation with one topic	0	1	2	3
M106. Gets very upset over small changes in routine or surroundings	0	1	2	3
M107. Makes strange repetitive movements (flapping arms, etc.)	0	1	2	3
M108. Has strange fascination for parts of objects	0	1	2	3
Mx. How often do the behaviors in Category M interfere with child's ability to follow daily routines or get along with others?	0	1	2	3

THANKYOU!

Part 3.
Affective Reactivity Index

Mood Questions

In the last 6 months and compared to others of the same age, how well does each of the following statements describe the behavior/feelings of your child?

	Not true	Somewhat true	Certainly true
1. Easily annoyed by others	0	1	2
2. Often loses temper	0	1	2
3. Stays angry for a long time	0	1	2
4. Angry most of the time	0	1	2
5. Gets angry frequently	0	1	2
6. Loses temper easily	0	1	2
7. Overall, irritability/anger/ moodiness causes problems	0	1	2

Part 4.
Impairment Rating Scale

Form Completed By: ___Mother ___Father ___ Other – Specify_____

Instructions: **Please circle the number on the lines at the points that you believe reflect the impact of the child's problems on this area and <u>whether he or she needs treatment or special services for the problems.</u> PLEASE COMPLETE BOTH SIDES OF THIS FORM.**

(1) How has your child's problems affected his or her relationship with friends and/or playmates?

0_____1_____2_____3_____4_____5_____6

No Problem — Extreme Problem

Definitely does not need treatment — Definitely needs treatment

(2) Regardless of whether this child is popular or unpopular with peers, does he or she have a special, close "best friend" that he or she has kept for more than a few months? (Please circle)

YES NO

(3) How has your child's problems affected his or her relationship with brothers or sisters?

(If has no brothers or sisters, check here_____ and skip to #3)

0_____1_____2_____3_____4_____5_____6

No Problem Extreme Problem

(4) How has your child's problems affected his or her relationship with you (and your spouse if present)?

0_____1_____2_____3_____4_____5_____6

No Problem Extreme Problem

(5) How has your child's problems affected his or her academic progress at school?

0_____1_____2_____3_____4_____5_____6

No Problem Extreme Problem

(6) How has your child's problems affected his or her self-esteem?

0_____1_____2_____3_____4_____5_____6

No Problem Extreme Problem

(7) How has your child's problems affected your family in general?

0_____1_____2_____3_____4_____5_____6

No Problem Extreme Problem

(8) Please circle a number of the following line at the point that you believe reflects the overall severity of this child's problem in functioning and overall need for treatment.

0_____1_____2_____3_____4_____5_____6

No Problem Extreme Problem

Part 5.
Stressful Life Events

Please indicate whether any of the following stressful life events occurred to your child/family in the past six months. If the event occurred more than once, please indicate the most recent date.

1. **New child(ren)** living in home (may be newborn or adopted child, foster child, or child(ren) of a previous relationship).

O Yes O No

MM/DD/YY:

2. **Parental figures have separated** (split up) **or divorced** and one parental figure has moved out of the house.

O Yes O No

MM/DD/YY:

3. **New parental figure moved into the child's home** due to remarriage or establishment of apparently permanent relationship. New parental figure has been present for at least 1 month.

O Yes O No

MM/DD/YY:

4. **The child moved to a new place**, with or without change of family structure.

O Yes O No

MM/DD/YY:

5. **Child changed school or childcare provider(s).** Reasons for change include: Started school, return of primary parent to work, family choice, need for special class, expulsion from previous school, changing schools or classrooms in the middle of the year, as well as other reasons.

O Yes O No

MM/DD/YY:

6. **Move by child or significant figure resulted in the end of a close relationship**, with significant figure no longer available for friendship and companionship. Do not include friendships or relationships maintained after move through regular phone calls, letters, and/or visits.

O Yes O No

MM/DD/YY:

7. **Death of a pet** to which the child was closely attached.

O Yes O No

MM/DD/YY:

8. **Noticeable reductions of family standard of living** as evidenced by inability to pay bills, need to sell things, need to move (including moving in with relatives), going on welfare or food stamps, inadequate food, clothing, heat. May be result of changes in household status and needs such as parental separation or divorce, death, taking in additional dependents, high medical bills or loss of household income due to cutback in hours, layoff or loss of job, inability to find employment, loss of employment benefits, depletion of savings, etc.

O Yes O No

MM/DD/YY:

9. **Loss of home** without separation from family. Child and family loses home because of eviction, end of lease, damage to home by a fire or natural disaster, or other reason and are not resettled in a home for at least one month. Do not include intentional moves to a new setting.

O Yes O No

MM/DD/YY:

10. **Parental arrest.**

O Yes O No

MM/DD/YY:

11. **Child's parental figure is hospitalized** for more than 24 hours.

O Yes O No

MM/DD/YY:

12. **Separation from parent for week or more.**

O Yes O No

MM/DD/YY:

13. **Serious car accident.**

O Yes O No

MM/DD/YY:

14. **Child struck by moving vehicle or bicycle.**

O Yes O No

MM/DD/YY:

15. **Poisoning**: Ingestion of an agent capable of producing an acute morbid, noxious, or deadly effect upon the child.

O Yes O No

MM/DD/YY:

16. **Accidental burning**: Accidentally, child suffers an injury by fire or excessive or intense heat. Exclude first-degree burns which are red, somewhat painful, similar to a sunburn, and non-blistering.

O Yes O No

MM/DD/YY:

17. **Near drowning**: To be nearly suffocated in water or other fluid; to come close to perishing in water or other fluid. To be coded, the event must be a serious accident that had the potential to be life threatening.

O Yes O No

MM/DD/YY:

18. **Accidental serious fall**

O Yes O No

MM/DD/YY:

19. **Mauled and/or bitten by an animal**

O Yes O No

MM/DD/YY:

20. **Fracture of child's bones**

O Yes O No

MM/DD/YY:

21. **Diagnosis of an illness** carrying **current** risk of death or chronic disability (e.g. cancer, AIDS, cystic fibrosis, diabetes). Include asthma if it requires more than 24-hour hospitalization.

O Yes O No

MM/DD/YY:

22. **Child admitted to a medical or psychiatric hospital** for more than 24 hours or spent more than 24 hours in a hospital emergency room.

O Yes O No

MM/DD/YY:

23. **Death of someone close** to the child: biological parent, sibling, peer, other parental figure, other relative with whom child has close ties, other adult who has played a significant role in the child's life.

O Yes O No

MM/DD/YY:

24. **Natural disaster**: events not caused by intentional human actions (e.g. floods, hurricanes, tornadoes, earthquakes) in which people died or were badly injured or property was extensively damaged, or there was a risk of these outcomes.

O Yes O No

MM/DD/YY:

25. **Fire**, either accidentally or deliberately set, in which people actually dies or were badly injured or property was extensively damaged, or there was a serious risk of these outcomes.

O Yes O No

MM/DD/YY:

26. **Witness to event** that caused, or had potential to cause death or severe injury.

O Yes O No

MM/DD/YY:

27. **Victim of physical violence** by non-family member. Child has been the victim of physical violence, with one or more people using force against the child with the potential to cause death or serious injury. Force may have been used in order to get something (e.g. mugging, robbery), or to intimidate or frighten the children, or for its own sake (assault, fight, torture). Victim may have been threatened with a weapon.

O Yes O No

MM/DD/YY:

28. **Removal from home** because of physical abuse or neglect.

O Yes O No

MM/DD/YY:

29. **High levels of Parental Stress** (include relationship/marital problems, job related problems, financial problems).

O Yes O No

MM/DD/YY:

30. **Any other stressor that occurred to the child or family that was not listed here**.

O Yes O No

Please describe:_____

MM/DD/YY:

31. **Poor social support provided to caregiver**.

O Absent; I have enough social support

O Present; I do not have enough social support

Appendix C. Daily diary questionnaire.

Instructions: We would like to know about you child's emotions and behaviors on a daily basis. Please complete each diary entry at night after your child goes to sleep. Provide a response to each question based on the same day only. For example, if you complete the diary after your child goes to bed at 8:00 pm, please think back to your child's behavior since he/she woke up that morning until 8:00pm that night. Please respond to each question for each behavior.

SECTION 1: INFORMATION ABOUT YOUR CHILD'S DAY: For how many minutes did your child attend school or daycare, or spend time with a relative or babysitter today (1 hour= 60 minutes)?(type in the number of minutes for all that apply; if none, type in zero):

A. Daycare
B. Preschool
C. Babysitter/Relative

Approximately how long did your child sleep last night?

Hours
Minutes

How would you rate the overall quality of your child's sleep last night?

- ❍ Not at all restful
- ❍ A little restful
- ❍ Somewhat restful
- ❍ Very restful
- ❍ Extremely restful

Section 2. 1. Your child got very upset when he/she expected to be separated from you and/or other caregivers.

A. How frequently did your child get very upset when he/she expected to be separated from you and/or another caregiver today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

2. Your child worried that you or another caregiver would be hurt or leave home and not come back.

A. How frequently did your child worry that you or another caregiver would be hurt or leave home and not come back today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

3. Your child worried that some disaster (e.g., getting lost, kidnapped, etc.) would separate him/her from you or another caregiver.

A. How frequently did your child worry that some disaster (e.g., getting lost, kidnapped, etc.) would separate him/her from you or another caregiver today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

4. Your child tried to avoid going to daycare, school , or somewhere else without you or another caregiver in order to stay with you or the other caregiver.

A. How frequently did your child try to avoid going to daycare, school, or somewhere else without you or another caregiver in order to stay with you or the other caregiver today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

5. Your child worried about being left home alone or with a sitter or other relative (e.g., your child worried that you or another caregiver would leave and not come back).

A. How frequently did your child worry about being left home alone or with a sitter or other relative today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

6. Your child seemed afraid to go to sleep unless he/she was near you or another caregiver.

A. How frequently did your child seem afraid to go to sleep unless he/she was near you or another caregiver today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat

- ❍ A lot
- ❍ A great deal

7. Your child had a nightmare last night about being separated from you or another caregiver (your child may have mentioned it in the morning, or woke up in the middle of the night to tell you about it).

A. How frequently did your child have a nightmare last night about being separated from you or another caregiver (your child may have mentioned it in the morning, or woke up in the middle of the night to tell you about it)? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

8. Your child complained about feeling sick when expecting to be separated from you or another caregiver.

A. How frequently did your child complain about feeling sick when expecting to be separated from your or another caregiver today? (Check one, then enter actual frequency)

- ❍ Not at all

- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)'
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

9. Overall, how much did the behaviors described in this section distress you and/or your child, interfere with your child's ability to follow daily routines, and/or get along with others today?

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

Section 3.

1. Your child seemed shy or quiet around new people.

A. How frequently did your child seem shy or quiet around new people today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. When your child seemed shy or quiet around new people, how long did it take your child to "warm up"?

Hours
Minutes

Check here if child never warmed up.

❍ Child never warmed up

C. In which setting(s) did this behavior occur today? (Check all that apply)

❑ Home
❑ School/Daycare
❑ Elsewhere (e.g., store, relative's home)
❑ Did not occur today

D. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

2. Your child was shy with peers/other children.

A. How frequently did your child seem shy with peers/other children today? (Check one, then enter actual frequency)

❍ Not at all
❍ 1-2 times
❍ 3-4 times
❍ 5 or more times

Enter Actual Frequency

B. When your child seemed shy with peers/other children, how long did it take your child to

"warm up"?

Hours
Minutes

Check here if child never warmed up.

❍ Child never warmed up

C. In which setting(s) did this behavior occur today? (Check all that apply)

❑ Home
❑ School/Daycare
❑ Elsewhere (e.g., store, relative's home)]
❑ Did not occur today

D. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

3. Your child was shy with family members and familiar adults.

A. How frequently was your child shy with family members and familiar adults today? (Check one, then enter actual frequency)

❍ Not at all
❍ 1-2 times
❍ 3-4 times
❍ 5 or more times

Enter Actual Frequency

B. When your child seemed shy with family members and familiar adults, how long did it take your child to "warm up"?

Hours
Minutes

Check here if child never warmed up.

❍ Child never warmed up

C. In which setting(s) did this behavior occur today? (Check all that apply)

❑ Home
❑ School/Daycare
❑ Elsewhere (e.g., store, relative's home)]
❑ Did not occur today

D. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

4. Your child cried, "froze" up, and/or withdrew from interacting with others in a social situation.

A. How frequently did your child cry, "freeze up" and/or withdraw from interacting with others in a social situation today? (Check one, then enter actual frequency)

❍ Not at all
❍ 1-2 times
❍ 3-4 times
❍ 5 or more times

Enter Actual Frequency

B. How long did this behavior last

today?

Hours
Minutes

Check here if your child never warmed up

❍ Child never warmed up

C. In which setting(s) did this behavior occur today? (Check all that apply)

❑ Home
❑ School/Daycare
❑ Elsewhere (e.g., store, relative's home)]
❑ Did not occur today

D. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

5. Overall, how much did the behaviors described in this section distress you and/or your child, interfere with your child's ability to follow daily routines, and/or get along with others today?

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

Section 4.

1. Your child experienced sadness.

A. How often did your child experience any sadness today? (Check one, then enter actual frequency)

❍ Not at all
❍ 1-2 times
❍ 3-4 times

❍ 5 or more times

Enter Actual Frequency

B. When your child was sad, how long did each instance last today?

Hours
Minutes

C. In which setting(s) did this behavior occur today? (Check all that apply)

❑ Home
❑ School/Daycare
❑ Elsewhere (e.g., store, relative's home)
❑ Did not occur today

D. How long did your child's sadness last today (i.e., if you added up all the instances across the day)?

❍ Less than 1 hour
❍ 1-2 hours
❍ 2-3 hours
❍ 4 hours or more

Enter Actual Duration

E. How problematic was your child's sadness today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

2. Child experienced irritability, anger or moodiness.

A. How often did your child experience irritability/ (Check one, then enter actual frequency)

❍ Not at all
❍ 1-2 times
❍ 3-4 times

❍ 5 or more times

Enter Actual Frequency

B. When your child was irritable/angry/moody, how long did each instance last today?

Hours
Minutes

C. In which setting(s) did this behavior occur today? (Check all that apply)

❑ Home
❑ School/Daycare
❑ Elsewhere (e.g., store, relative's home)
❑ Did not occur today

D. How long did your child's irritability/anger/moodiness last today (i.e., if you added up all the instances across the day)?

❍ Less than 1 hour
❍ 1-2 hours
❍ 2-3 hours
❍ 4 hours or more

Enter Actual Duration

E. How problematic was your child's irritability/anger/moodiness today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

3. Your child had a temper tantrum.

A. How often did your child have tantrums today? A tantrum is an episode of excessive temper, frustration, or upset, manifested by shouting, crying or stamping, and/or involving violence or attempts at damage directed against oneself, others, or property) (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. When your child had a tantrum(s), how long did each tantrum last

today?

Hours
Minutes

C. After your child stopped having a tantrum, how long did it take him/her to return to his or her typical mood?

Hours
Minutes

D. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

E. How problematic was your child's tantrum today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur

- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

4. Your child had low interest in activities.

A. How often did your child experience any low interest in activities (e.g., playing with other children or engaging in activities that he or she usually enjoys)? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. When your child was not interested in fun activities or playing with other children, how long did each instance last today? (enter 0 if not applicable)

Hours
Minutes

C. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

D. How long did your child's low interest in activities (e.g., playing with other children or engaging in activities that he or she usually enjoys) last today (i.e., if you added up all the instances across the day)?

- ❍ Less than 1 hour
- ❍ 1-2 hours
- ❍ 2-3 hours
- ❍ 4 hours or more

Enter Actual Duration

E. How problematic was your child's low interest in activities or playing with other children today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

5. Your child talked about death or suicide.

A. How often did your child talk about death or suicide today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

6. Your child felt badly about him or herself.

A. How often did your child feel badly about him/herself today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

7. Your child had low energy or was tired for no apparent reason.

A. How often did your child have low energy or was tired for no apparent reason today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times

❍ 5 or more times

Enter Actual Frequency

B. When your child had low energy or was tired for no apparent reason, how long did each instance last today? (enter 0 if not applicable)

Hours
Minutes

C. In which setting(s) did this behavior occur today? (Check all that apply)

❑ Home
❑ School/Daycare
❑ Elsewhere (e.g., store, relative's home)
❑ Did not occur today

D. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

8. Your child experienced a change in his/her normal appetite or weight.

A. Did your child have a change in his/her normal appetite or weight today?

❍ No
❍ Yes

B. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot

❍ A great deal

9. Your child experienced a change in his/her normal sleeping habits (trouble sleeping, sleeping too little or sleeping too much).

A. Did your child have a change in his/her normal sleeping habits today?

❍ No
❍ Yes

B. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

❍ Not at all/Didn't occur
❍ Only a little
❍ Somewhat
❍ A lot
❍ A great deal

10. Your child experienced a change in his/her normal activity level (overactive or less active). This is a change from the child's normal activity level and is different than how active your child would typically be given the circumstances of the day.

A. How often did your child have a change in his/her normal activity level today? (Check one, then enter actual frequency)

❍ Not at all
❍ 1-2 times
❍ 3-4 times
❍ 5 or more times

Enter Actual Frequency

B. When your child was overactive or less active today, how long did each instance last today? (enter 0 if not applicable)

Hours
Minutes

C. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

D. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

11. Your child experienced a change in his/her ability to concentrate or make decisions. If your child typically has difficulty concentrating, you may have noticed that the child is having even greater difficulty concentrating or making decisions. Or, for a child with no or little problems with concentration or making decisions, you may have noticed that your child has started to have difficulty concentrating or making decisions.

A. How often did your child have a change in his/her ability to concentrate or make decisions today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

12. Your child was sensitive or tearful today.

A. How often was your child sensitive or tearful today? (Check one, then enter actual frequency)

- ❍ Not at all
- ❍ 1-2 times
- ❍ 3-4 times
- ❍ 5 or more times

Enter Actual Frequency

B. In which setting(s) did this behavior occur today? (Check all that apply)

- ❑ Home
- ❑ School/Daycare
- ❑ Elsewhere (e.g., store, relative's home)
- ❑ Did not occur today

C. How long did your child's sensitivity or tearfulness last today (i.e., if you added up all the instances across the day)?

- ❍ Less than 1 hour
- ❍ 1-2 hours
- ❍ 2-3 hours
- ❍ 4 hours or more

Enter Actual Duration

D. How problematic was this behavior today? (e.g., child and/or parent was distressed or upset; child's routine was disrupted; relationships with others were affected)

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

13.Overall, how much did the behaviors described in this section distress you and/or your child, interfere with your child's ability to follow daily routines, and/or get along with others today?

- ❍ Not at all/Didn't occur
- ❍ Only a little
- ❍ Somewhat
- ❍ A lot
- ❍ A great deal

SECTION 4: FINAL QUESTIONS ABOUT THE DAY:

1. Parenting my child was difficult and/or stressful today.

- ❍ Not at all
- ❍ Mildly stressful
- ❍ Somewhat stressful
- ❍ Very stressful
- ❍ Extremely stressful

2. How well did you get along with your child today?

- ❍ We did not get along well today
- ❍ We got along a little today
- ❍ We got along somewhat well today
- ❍ We got along well today
- ❍ We got along very well today

3. How stressful was the day for your child? (Consider fighting with others, difficult school/daycare situations, going to a doctor's appointment, change in schedule, or any other significant event).

- ❍ Not at all stressful
- ❍ Mildly stressful
- ❍ Somewhat stressful
- ❍ Very stressful
- ❍ Extremely stressful

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